

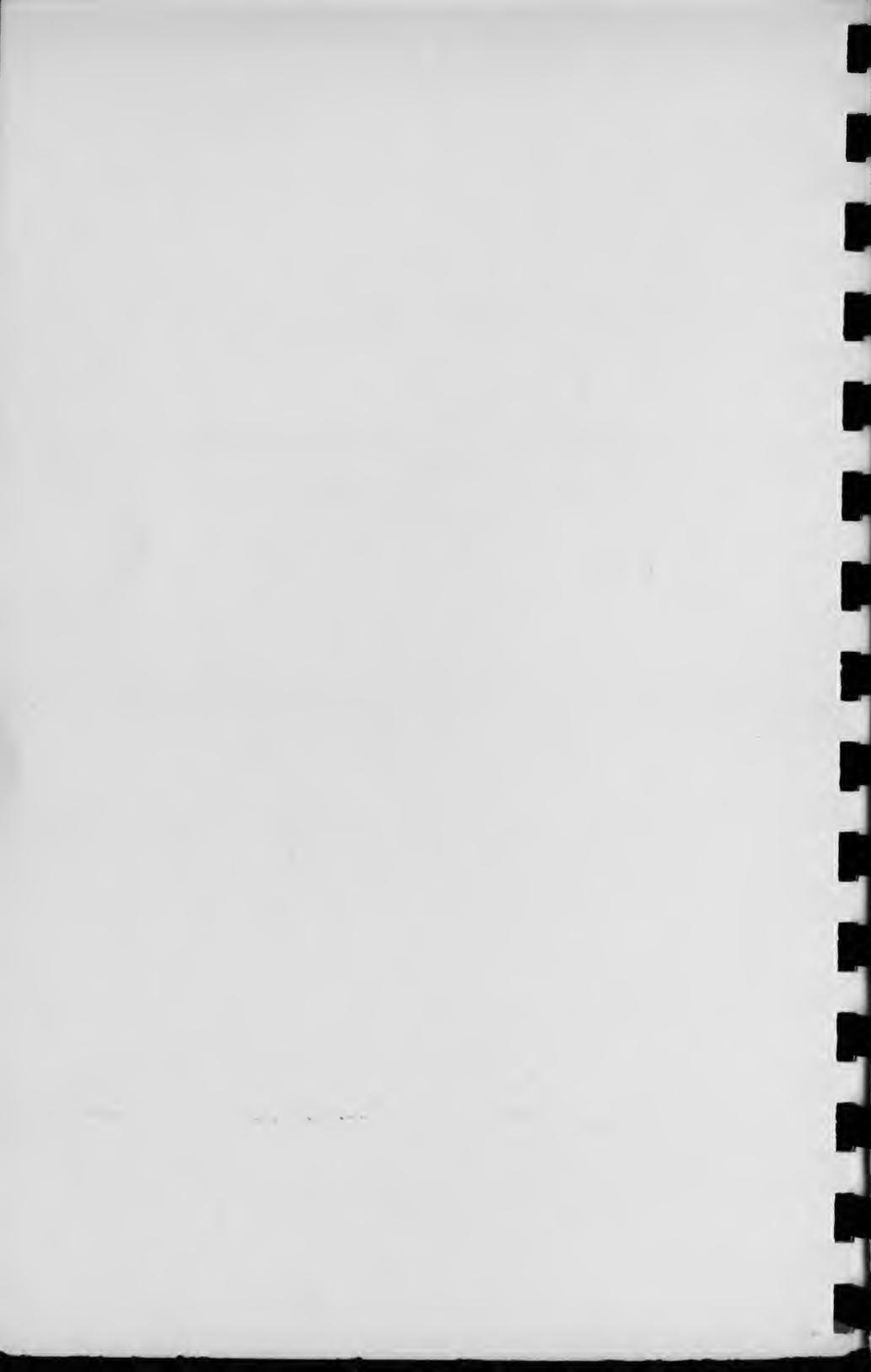
30
MUSIC PROGRAMS
FOR
TIMEX SINCLAIR
2068



By OLEG D. JEFIMENKO



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By OLEG D. JEFIMENKO
West Virginia University

Electret Scientific Company
Star City

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Publisher's address:

Electret Scientific Company
P.O. Box No. 4132
Star City, West Virginia 26505

ISBN 0-917406-20-6

Printed in the United States of America

PREFACE

The Timex Sinclair 2068 computer is a very capable musical instrument. It can play music in one, two, three, or four voices. It can be easily programmed for music in BASIC by means of the BEEP and the SOUND commands. And its frequency range is almost 11 octaves.

This book presents 30 BASIC programs for T/S 2068 that play various musical compositions. Most of the compositions selected for the book are well-known and universally admired representatives of popular, classical, and folk music. A few of the compositions are not so well known but are not less pleasing than the others.

The book is divided in three parts. The first two parts contain programs that play music in one voice by using the BEEP command. The third part contains programs that play music in several voices by using both the BEEP and the SOUND commands.

A special feature of the book is a collection of programs that can be used for practicing guitar accompaniment. They are contained in the second part. When these programs are played, the corresponding guitar chords are displayed on the screen.

Another special feature is the presence of three "Music Box" programs that can be used to combine all of the compositions presented in the book and to select any of them for playing.

The book has been designed for music lovers of all ages and all backgrounds. Therefore most of the programs are very simple. The functioning of the various programs is clearly explained. However, it is not necessary to know how they work in order to copy and to play them.

I am pleased to express my gratitude to my wife Valentina who helped to transcribe the various compositions for the book and assisted in the preparation of the book for publication.

Oleg D. Jefimenko

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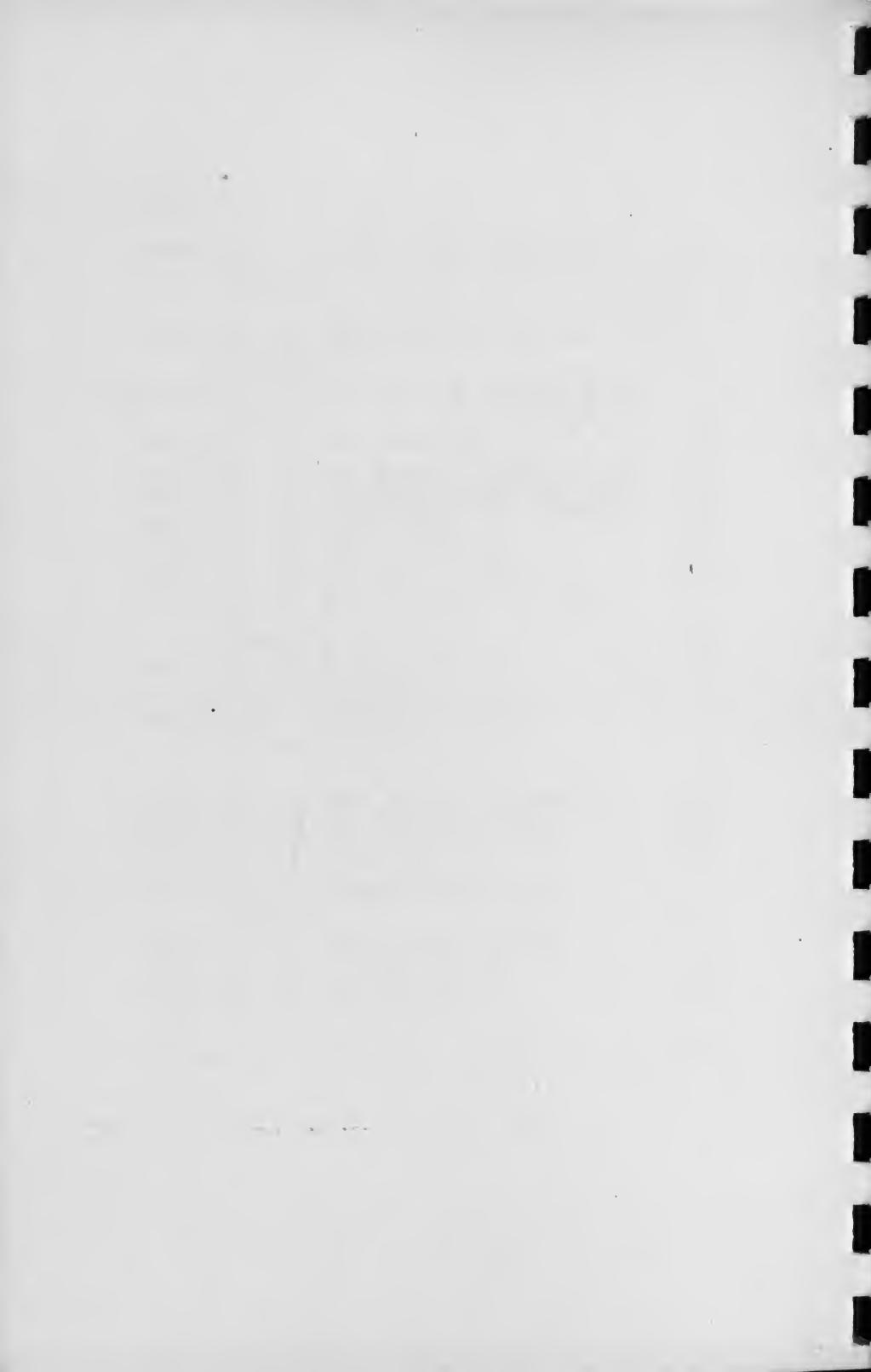
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PART I

MUSIC IN
ONE VOICE



MEET THE BEEP CHANNEL

The BEEP channel of T/S 2068 can play all sorts of compositions in a most satisfactory manner. However, the sound produced by the computer's internal speaker is rather poor. To obtain a really good sound, you should connect your computer to a regular audio system, to a TV (if it has an audio input), or to a cassette recorder with a good audio amplifier. The BEEP signals come out of the MIC socket of the computer. Use a suitable cable to connect this socket to the input terminal of your audio system. The cassette recorder that you use to SAVE your T/S 2068 programs will probably also play the BEEP signals, if you pull out the earphone plug from the recorder and press the PLAY and PAUSE buttons of the recorder (the MIC terminal of the recorder should, of

course, be connected to the MIC terminal of the computer).

The following program will acquaint you with T/S 2068 BEEP tones. The program plays all 88 piano notes from the highest to the lowest and back.

* Program A *

```
10 BORDER 4: PAPER 6: CLS
20 PRINT PAPER 5; AT 4,6;"THIS
PROGRAM PLAYS"; AT 6,6;"ALL 88 PI
ANO NOTES"
30 PRINT AT 11,4;"PRESS ANY KE
Y TO START"
40 PAUSE 0
50 FOR K=1 TO 88
60 BEEP .05,49-K
70 NEXT K
80 FOR K=1 TO 88
90 BEEP .05,-39+K
100 NEXT K
110 STOP
120 SAVE "PIANO" LINE 10
```

* Explanation of the program *

The program works as follows. Line 10 sets the green border and yellow background for a pleasing visual effect. Line 20 displays on the screen the message explaining

the purpose of the program; the message is printed on the cyan background. Line 30 instructs the operator how to start the playing. Line 40 waits until a key is pressed.

Lines 50 and 70 define a FOR-NEXT loop that executes 88 times the BEEP command contained in line 60. Each time when this command is executed, a different note, starting with the highest ($k=1$) and ending with the lowest ($k=88$), is played. The duration of each note is 0.05 of a second.

Lines 80, 90 and 100 are the same as lines 50, 60 and 70, except that the notes are now played from the lowest to the highest. Line 110 stops the program. Line 120 saves the program on tape, if desired, and makes the program self-starting when loaded back into the computer.

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LEGATO AND STACCATO

Our first program (Program A) is written in such a manner that once a particular note has started, the note continues until the next note begins. Thus all notes are played one after the other without interruption. This is the legato mode of the BEEP sound.

However, by using the PAUSE command after each note, one can introduce short rests between the notes. As a result, each note terminates before the next one begins. In this way one creates the staccato mode of the BEEP sound.

The following program shows the difference between the two modes.

*** Program B ***

```
10 BORDER 4: PAPER 6: CLS
20 PRINT AT 10,12;"LEGATO"
```

```
30 FOR I=46 TO -14 STEP -3
40 BEEP 1/8,I
50 NEXT I
60 CLS : PRINT AT 10,11;"STACCO"
ATO"
70 FOR I=46 TO -14 STEP -3
80 BEEP 1/16,I: PAUSE 1/16*60
90 NEXT I
100 GO TO 10
110 SAVE "STACCATO" LINE 10
```

* Explanation of the program *

Line 10 sets the green border and yellow background, as before. Line 20 prints the word "LEGATO" in the center of the screen.

Lines 30 and 50 define a FOR-NEXT loop for playing downward 20 different notes at 3-semitone intervals. Line 40 plays the notes. Their duration is 1/8 of a second.

Line 60 clears the screen and prints the word "STACCATO" in the center of the screen.

Lines 70 and 90 are the same as lines 30 and 50. Once again the BEEP notes are played, this time by line 80. However, the duration of each note is now only 1/16 of a second, and each note is followed by a rest (pause) that lasts for 1/16 of a second.

Line 100 returns control to line 10, so that the program repeats itself. Line 110 saves the program

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on tape, if desired; the saved program starts by itself when loaded back into the computer.

GUITAR TUNER

The T/S 2068 BEEP generator is at least as reliable a frequency standard as the pitch pipes commonly used for guitar tuning. One can use therefore the BEEP sound of the T/S 2068 for tuning the guitar. The program presented here generates on demand the pitch of each of the six guitar strings.

* Program C *

```
10 BORDER 4: PAPER 6: CLS
20 PRINT PAPER 5;AT 4,6;"*TUNI
NG THE GUITAR*"
30 DIM S(6): LET S(1)=4: LET S
(2)=-1: LET S(3)=-5: LET S(4)=-1
0: LET S(5)=-15: LET S(6)=-20
40 PRINT PAPER 5;AT 8,8;"STRIN
G NUMBER?"
50 PAUSE 0: LET N$=INKEY$: IF
CODE N$<49 OR CODE N$>54 THEN GO
TO 50
60 LET N=VAL N$
70 PRINT AT 12,5;"TUNING STRIN
G NUMBER ";N
80 BEEP 5,S(N)
```

```
90 GO TO 10
100 SAVE "GUITAR" LINE 10
```

* Explanation of the program *

The program functions as follows. Line 10 sets the green border and yellow background for a prettier visual effect. Line 20 prints the title of the program on the cyan background. Line 30 assigns six BEEP tone values to the array S, each value corresponding to the pitch of one of the six guitar strings. Line 40 requests to press a number key whose number is the same as that of the string to be tuned.

Line 50 identifies the key that is pressed. If the key represents a number between 1 and 6, this number is assigned to the variable N in line 60. If any other key is pressed, the program repeats line 50 again. Line 70 displays on the screen the number of the string that was selected in line 50. Line 80 generates the pitch of the selected string. Line 90 returns the program to the beginning, so that another string can be tuned.

The duration of the tone generated in line 80 is 5 seconds. If desired, it can be made as long as 10 seconds by replacing the

numeral 5 in line 80 with another numeral or number not larger than 10.

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HAPPY BIRTHDAY!

We are now ready for our first composition program. This program is relatively short and simple, so that it can be copied easily. The composition is the traditional "Happy Birthday to You!" It is transcribed in the key of C.

* Program 1 *

```
10 BORDER 4: PAPER 6: CLS : RE  
AD N$,TEMPO  
20 PRINT PAPER 5;"***** NO  
W PLAYING *****"  
30 PRINT AT 10,(31-LEN N$)/2;N  
$  
40 PRINT PAPER 5 ;AT 21,0;"***  
***** NOW PLAYING *****"  
50 READ NOTE,VALUE  
60 BEEP TEMPO/VALUE,NOTE: GO T  
O 50  
70 STOP  
80 SAVE "BIRTHDAY" LINE 10  
1000 DATA "HAPPY BIRTHDAY TO YOU  
!",1.5
```

```
1010 DATA 7,8,7,8,9,4,7,4,12,4,1  
1,2,7,8,7,8,9,4,7,4,14,4,12,2,7,  
8,7,8,19,4,15,4,12,8,12,8,11,4,9  
,4,17,8,17,8,15,4,12,4,14,4,12,4  
/3
```

* Explanation of the program *

As before, line 10 sets the border and background. In addition, it instructs the computer to read the name (designated as N\$) and the tempo of the composition, which are given in the first DATA statement, line 1000.

Line 20 prints at the top of the screen on the cyan background a series of asterisks with the words "NOW PLAYING" between them. Line 30 prints the name of the composition centered between the left and the right margins in the middle of the screen. Line 40 is the same as line 20, except that the asterisks and the words are printed at the bottom of the screen.

Line 50 instructs the computer to read the notes and their durations (values), which are given in the second DATA statement, line 1010. The data in this list are arranged in pairs: the first number of each pair is the pitch of the note to be played, the second number is its duration.

Line 60 plays a note and then returns control to line 50, so that the next note can be read and played. Line 70 stops the program after all the notes have been played.

Line 80 makes it possible to save the program, if desired. The DATA list starts with line 1000 rather than with some other line number in order to simplify the placing of this composition in "Music Box 1" (see Chapters 5 and 18).

JINGLE BELLS

Although simple programs like the one just presented (Program 1) are perfectly adequate for playing any composition, they lack the flexibility and convenience that a really good music program should have. This deficiency is corrected in the program presented here. The program not only plays the composition but also allows one to change its tempo and tonality (key). Furthermore, it makes it possible to play the composition continuously rather than just once.

The composition is the lovely "Jingle Bells." It is transcribed in the key of G.

Note:

Starting with this program, you have a choice to copy each program as it appears in the book or, preferably, to construct your "Music Box 1." To construct the

Music Box, first copy the "Music Box 1" program (Chapter 18) and save it on tape. Then add to it the DATA lists for the individual compositions and again save it, this time with the DATA lists that you have incorporated into it. Do not copy any lines from the individual programs other than the DATA lines.

In this way you will save a great deal of time and effort and will have all compositions in one comprehensive program that offers not only all the flexibility of the individual programs but also a choice of the composition to be played.

* Program 2 *

```
10 BORDER 4: PAPER 6: CLS : RE  
AD N$,R  
20 LET FF=0: LET TT=10: LET B=  
0: LET Z$=""  
30 PRINT PAPER 5;"***** NO  
W PLAYING *****"  
40 PRINT AT 10,(31-LEN N$)/2;N  
$  
50 PRINT PAPER 5 ;AT 21,0;"***  
***** NOW PLAYING *****"  
60 PRINT PAPER 3; INK 7;AT 20,  
0;"TO STOP, PRESS ""SHIFT"" + ""  
BREAK"""  
70 LET T=R#TT
```

```
    80 READ F,V: ON ERR GO TO 120
    90 IF F<>99 THEN GO TO 110
   100 PAUSE T/V*50: GO TO 80
   110 BEEP T/V,F+FF: GO TO 80
   120 ON ERR RESET
   130 RESTORE 1210: IF Z$="1" THE
N GO TO 80
   140 CLS : PRINT AT 7,0;"PRESS "
"1"" TO PLAY CONTINUOUSLY"
   150 PRINT ""PRESS ""2"" TO PLAY
DIFFERENTLY"
   160 PRINT ""PRESS ""5"" TO STOP
"
   170 PAUSE 0: LET Z$=INKEY$
   180 IF Z$="1" THEN CLS : GO TO
30
   190 IF Z$="2" THEN GO TO 210
   200 STOP
   210 CLS : PRINT AT 4,0;"YOU CAN
PLAY THIS COMPOSITION"
   220 PRINT "AT A DIFFERENT TEMPO
THE"
   230 PRINT "ORIGINAL TEMPO IS 10
INPUT 10"
   240 PRINT "TO RETAIN THE ORIGIN
AL TEMPO."
   250 PRINT "INPUT A LARGER NUMBE
R FOR A"
   260 PRINT "SLOWER TEMPO. INPUT
A SMALLER"
   270 PRINT "NUMBER FOR A FASTER
TEMPO."
   280 INPUT TT
   290 CLS : PRINT AT 4,0;"YOU CAN
CHANGE THE TONALITY"
   300 PRINT "OF THE COMPOSITION.
INPUT 0 TO"
   310 PRINT "RETAIN THE ORIGINAL
TONALITY."
   320 PRINT "INPUT A POSITIVE NUM
BER TO MAKE"
   330 PRINT "THE TONALITY HIGHER.
INPUT A"
   340 PRINT "NEGATIVE NUMBER TO M
AKE IT"
   350 PRINT "LOWER. EACH UNIT CH
ANGES THE"
```

```
360 PRINT "TONALITY BY ONE SEMI
-TONE."
370 INPUT FF: CLS : GO TO 30
380 SAVE "JINGLE" LINE 10
1200 DATA "JINGLE BELLS",.08
1210 DATA 13,4,13,4,13,4,99,4,13
,4,13,4,13,4,99,4,13,4,16,4,9,4,
11,4,13,4/3,99,4,14,4,14,4,14,4,4,
14,4,14,4,13,4
1220 DATA 13,4,99,4,13,4,11,4,11
,4,13,4,11,4,99,4,16,4,99,4,13,4
,13,4,13,4,99,4,13,4,13,4,13,4,9
9,4,13,4,16,4
1230 DATA 9,4,11,4,13,4/3,99,4,1
4,4,14,4,14,4,14,4,14,4,13,4,13
,4,99,4,16,4,16,4,14,4,11,4,9,4,9
9,4,21,4,99,4
```

* Explanation of the program *

Line 10 sets the border and background and then reads the name N\$ and the tempo rate R of the composition from the first line of the DATA list (line 1200). Line 20 initializes the key modifier FF, the tempo modifier TT, and the flag (control string) Z\$.

Lines 30-50 print the "title page," just as lines 20-40 of Program 1 did. Line 60 prints on the title page the instruction how to stop the playing.

Line 70 sets the tempo equal to the tempo rate R multiplied by the tempo modifier TT (initially TT=10). Line 80 reads a note or a rest, both designated as F, and their duration (value), designated

as V, from the second and the following lines of the DATA list (lines 1210 etc.). The ON ERR statement in line 80 transfers control to line 120 after the last note of the composition has been played.

Line 90 checks if there is a rest in the composition ($F=99$); if a rest is absent, the program proceeds to line 110. If a rest is present, line 100 is executed. This line introduces a PAUSE for the duration of the rest, after which control is transferred to line 80, so that the next note or rest can be read.

Line 110 generates a BEEP signal whose duration is determined by the tempo T and by the value of the note (or rest) V. The pitch of the signal is controlled by the quantity $F+FF$, where F is the note as it appears in the DATA list, and FF is the key modifier (initially $FF=0$). After the BEEP signal has been generated for the indicated duration, control is transferred to line 80, and the next note (or rest) is read.

Line 120 removes the ON ERR restriction introduced in line 80 (unless the restriction is removed, the program cannot be stopped, except by turning the computer off).

Line 130 causes the READ statement of line 80 to start again from the second line of the DATA list, which is needed for repeated playing of the composition. Then it checks whether the flag Z\$ is set to "1" (initially Z\$=""). If it is, control is transferred to line 80, and the composition is played again. If Z\$ is not set to "1", line 140 is executed. This line clears the screen and together with lines 150 and 160 prints the instructions ("menu") for playing the composition continuously, for playing it differently, or for stopping the playing.

Line 170 waits until a key is pressed. Then it assigns the symbol represented by this key to the string Z\$, after which line 180 is executed. If Z\$ is "1", the screen is cleared and control is transferred to line 30 for a continuous playing of the composition. If Z\$ is not "1", line 190 is executed. If Z\$ is "2", then line 190 transfers control to line 210. If Z\$ is neither "1" nor "2", line 200 is executed, and the program stops.

Line 210 clears the screen and together with lines 220-270 prints the instructions for changing the tempo of the composition. Line 280 accepts the number for the desired

tempo modifier TT. Line 290 clears the screen once again and together with lines 300-360 prints the instructions for changing the key (tonality) of the composition. Line 370 accepts the number for the desired key modifier FF, clears the screen, and transfers control to line 30 for a new playing of the composition.

Line 380 saves the program, if desired.

Line 1200 contains the DATA for the name and for the tempo rate of the composition. Lines 1210, 1220 and 1230 contain the DATA for the notes and rests of the composition.

The notes and the rests are listed in the DATA statements in the following manner. Each note or rest is represented by two numbers: the first is the pitch, the second is the value. Pitch = 99 represents a rest. The values of the notes and rests as they appear in the DATA statements are the reciprocals of the values as they are actually written in the score of the composition. For example: one whole note is 1, one half is 2, one quarter is 4, one eighth is 8, three eighths is $8/3$, three sixteenths is $16/3$, etc.

BRIDAL CHORUS

Our next composition is the famous "Bridal Chorus" from the opera "Lohengrin" by the German composer (Wilhelm) Richard Wagner (1813-1883). Better known as "Here Comes the Bride," it became one of the most familiar wedding marches and is frequently played at the beginning of the ceremony. This composition is transcribed in the key of C.

* Program 3 *

```
10 BORDER 4: PAPER 6: CLS : RE  
AD N$,R  
20 LET FF=0: LET TT=10: LET B=  
0: LET Z$=""  
30 PRINT PAPER 5;"***** NO  
W PLAYING *****"  
40 PRINT AT 10,(31-LEN N$)/2;N  
$  
50 PRINT PAPER 5 ;AT 21,0;"***  
***** NOW PLAYING *****"  
60 PRINT PAPER 3; INK 7;AT 20/  
0;"TO STOP, PRESS ""SHIFT"" +  
BREAK"""
```

```
70 LET T=R+TT
80 READ F,V: ON ERR GO TO 120
90 IF F<>99 THEN GO TO 110
100 PAUSE T/V*60: GO TO 80
110 BEEP T/V,F+FF: GO TO 80
120 ON ERR RESET
130 RESTORE 1410: IF Z$="1" THE
N GO TO 80
140 CLS : PRINT AT 7,0;"PRESS "
"1"" TO PLAY CONTINUOUSLY"
150 PRINT "PRESS ""2"" TO PLAY
DIFFERENTLY"
160 PRINT "PRESS ""5"" TO STOP
"
170 PAUSE 0: LET Z$=INKEY$
180 IF Z$="1" THEN CLS : GO TO
30
190 IF Z$="2" THEN GO TO 210
200 STOP
210 CLS : PRINT AT 4,0;"YOU CAN
PLAY THIS COMPOSITION"
220 PRINT "AT A DIFFERENT TEMPO
"
230 PRINT "ORIGINAL TEMPO IS 10
"
240 PRINT "TO RETAIN THE ORIGIN
AL TEMPO."
250 PRINT "INPUT A LARGER NUMBE
R FOR A"
260 PRINT "SLOWER TEMPO. INPUT
A SMALLER"
270 PRINT "NUMBER FOR A FASTER
TEMPO."
280 INPUT TT
290 CLS : PRINT AT 4,0;"YOU CAN
CHANGE THE TONALITY"
300 PRINT "OF THE COMPOSITION.
INPUT 0 TO"
310 PRINT "RETAIN THE ORIGINAL
TONALITY."
320 PRINT "INPUT A POSITIVE NUM
BER TO MAKE"
330 PRINT "THE TONALITY HIGHER.
"
340 PRINT "NEGATIVE NUMBER TO M
AKE IT"
350 PRINT "LOWER. EACH UNIT CH
ANGES THE"
```

```
360 PRINT "TONALITY BY ONE SEMI
-TONE."
370 INPUT FF:CLS : GO TO 30
380 SAVE "BRIDAL" LINE 10
1400 DATA "BRIDAL CHORUS",,2
1410 DATA 7,4,7,5.33,7,16,7,4,7,
4,7,1,7,4,12,5.33,12,16,12,2,7,4
,14,5.33,11,16,12,2,7,4,12,5.33,
17,16,17,4,16,8,14,8
1420 DATA 12,4,11,5.33,12,16,14,
2,7,4,12,5.33,12,16,12,2,7,4,14,
5.33,11,16,12,2,7,4,12,8,16,8,19
,4,16,8,12,8,9,4,14,8
1430 DATA 16,8,12,2,17,4,16,8,14
,8,9,4,9,4,11,4,12,5.33,14,16,14
,2,17,4,16,8,14,8,9,4,9,4,11,4,1
2,5.33,14,16,14,2
1440 DATA 7,4,12,5.33,12,16,12,2
,7,4,14,5.33,11,16,12,2,7,4,12,8
,16,8,19,4,16,8,12,8,21,2,19,8,1,
7,8,16,8,14,8,12,1
```

* Explanation of the program *

The program is identical to Program 2, except for lines 130, 380 and for the DATA list. The DATA list starts with line 1400. Therefore the RESTORE statement in line 130 refers to line 1410, where the DATA for the notes begin. The name used in line 380 is now "BRIDAL."

THE IRISH WASHERWOMAN

The composition presented here is a popular Irish jig. Its name is "The Irish Washerwoman."

The jig is a fast, spirited dance of the common people. It originated centuries ago. William Shakespeare, in "Much Ado About Nothing," called the jig "hot and hasty." Many classical composers incorporated the jig, or the "gigue," as it is usually called, in their musical works.

The "Irish Washerwoman" is transcribed in the key of C.

* Program 4 *

```
10 BORDER 4: PAPER 6: CLS : RE
AD N$,R
20 LET FF=0: LET TT=10: LET B=
0: LET Z$=""
30 PRINT PAPER S;"***** NO
W PLAYING *****"
```

```
40 PRINT AT 10,(31-LEN N$)/2;N
$ 50 PRINT PAPER 5;AT 21,0;"***"
*** NOW PLAYING *****
60 PRINT PAPER 3; INK 7;AT 20,
0;"TO STOP, PRESS ""SHIFT"" + """
BREAK"""
70 LET T=R*T
80 READ F,U: ON ERR GO TO 120
90 IF F<>99 THEN GO TO 110
100 PAUSE T/U*60: GO TO 80
110 BEEP T/U,F+FF: GO TO 80
120 ON ERR RESET
130 RESTORE 1610: IF Z$="1" THE
N GO TO 80
140 CLS : PRINT AT 7,0;"PRESS "
"1"" TO PLAY CONTINUOUSLY"
150 PRINT "/"PRESS ""2"" TO PLAY
DIFFERENTLY"
160 PRINT "/"PRESS ""6"" TO STOP
"
170 PAUSE 0: LET Z$=INKEY$
180 IF Z$="1" THEN CLS : GO TO
30
190 IF Z$="2" THEN GO TO 210
200 STOP
210 CLS : PRINT AT 4,0;"YOU CAN
PLAY THIS COMPOSITION"
220 PRINT "AT A DIFFERENT TEMPO
THE"
230 PRINT "ORIGINAL TEMPO IS 10
INPUT 10"
240 PRINT "TO RETAIN THE ORIGIN
AL TEMPO."
250 PRINT "INPUT A LARGER NUMBE
R FOR A"
260 PRINT "SLOWER TEMPO. INPUT
A SMALLER"
270 PRINT "NUMBER FOR A FASTER
TEMPO."
280 INPUT TT
290 CLS : PRINT AT 4,0;"YOU CAN
CHANGE THE TONALITY"
300 PRINT "OF THE COMPOSITION.
INPUT 0 TO"
310 PRINT "RETAIN THE ORIGINAL
TONALITY."
```

```
320 PRINT "INPUT A POSITIVE NUMBER TO MAKE"
330 PRINT "THE TONALITY HIGHER.
    INPUT A"
340 PRINT "NEGATIVE NUMBER TO MAKE IT"
350 PRINT "LOWER. EACH UNIT CHANGES THE"
360 PRINT "TONALITY BY ONE SEMI-TONE."
370 INPUT FF: CLS : GO TO 30
380 SAVE "IRISH" LINE 10
1600 DATA "THE IRISH WASHERWOMAN"
".,08
1610 DATA 19,16,17,16,16,8,12,8,
12,8,7,8,12,8,12,8,16,8,12,8,16,
8,19,8,17,8,16,8,17,8,14,8,14,8,
7,8,14,8
1620 DATA 14,8,17,8,14,8,17,8,21
,8,19,8,17,8,16,8,12,8,12,8,7,8,
12,8,12,8,16,8,12,8,16,8,19,8,17
,8,16,8,17,8
1630 DATA 16,8,17,8,14,8,19,8,17
,8,16,8,12,8,12,8,12,4,19,16,17,
16,16,8,12,8,12,8,12,8,7,8,12,8,12,8,
16,8,12,8,16,8
1640 DATA 19,8,17,8,16,8,17,8,14
,8,14,8,7,8,14,8,14,8,17,8,14,8,
17,8,21,8,19,8,17,8,16,8,12,8,12
,8,7,8,12,8
1650 DATA 12,8,16,8,12,8,16,8,19
,8,17,8,16,8,17,8,16,8,17,8,14,8
,19,8,17,8,16,8,12,8,12,8,12,4
```

* Explanation of the program *

The program is identical to Program 2, except for lines 130, 380 and for the DATA list. The DATA list starts with line 1600. Therefore the RESTORE statement in line 130 refers to line 1610, where the DATA for the notes begin. The name used in line 380 is "IRISH."

8

JOY TO THE WORLD

Of the many glorious and jubilant Christmas songs, "Joy to the World" is one of the most popular. Its composer is George Friedrich Handel (1685-1759). He was born in Germany but lived most of his life in England, where he became a naturalized Englishman, and where he created his grandest musical works.

The composition is transcribed in the key of C.

* Program 5 *

```
10 BORDER 4: PAPER 6: CLS : RE
AD N$,R
20 LET FF=0: LET TT=10: LET Z$=
="""
30 PRINT PAPER 5;"***** NO
W PLAYING *****"
40 PRINT AT 10,(31-LEN N$)/2;N
$
50 PRINT PAPER 5 ;AT 21,0;"***,
***** NOW PLAYING *****"
```

```
60 PRINT PAPER 3; INK 7; AT 20,  
0; "TO STOP, PRESS ""SHIFT"" + ""  
BREAK"""  
70 LET T=R#TT  
80 READ F,U: ON ERR GO TO 120  
90 IF F<>99 THEN GO TO 110  
100 PAUSE T/U*60: GO TO 80  
110 BEEP T/U,F+FF: GO TO 80  
120 ON ERR RESET  
130 RESTORE 1810: IF Z$="1" THE  
N GO TO 80  
140 CLS : PRINT AT 7,0;"PRESS "  
"1"" TO PLAY CONTINUOUSLY"  
150 PRINT "PRESS ""2"" TO PLAY  
DIFFERENTLY"  
160 PRINT "PRESS ""S"" TO STOP  
"  
170 PAUSE 0: LET Z$=INKEY$  
180 IF Z$="1" THEN CLS : GO TO  
30  
190 IF Z$="2" THEN GO TO 210  
200 STOP  
210 CLS : PRINT AT 4,0;"YOU CAN  
PLAY THIS COMPOSITION"  
220 PRINT "AT A DIFFERENT TEMPO  
THE"  
230 PRINT "ORIGINAL TEMPO IS 10  
INPUT 10"  
240 PRINT "TO RETAIN THE ORIGIN  
AL TEMPO."  
250 PRINT "INPUT A LARGER NUMBE  
R FOR A"  
260 PRINT "SLOWER TEMPO. INPUT  
A SMALLER"  
270 PRINT "NUMBER FOR A FASTER  
TEMPO."  
280 INPUT TT  
290 CLS : PRINT AT 4,0;"YOU CAN  
CHANGE THE TONALITY"  
300 PRINT "OF THE COMPOSITION.  
INPUT 0 TO"  
310 PRINT "RETAIN THE ORIGINAL  
TONALITY."  
320 PRINT "INPUT A POSITIVE NUM  
BER TO MAKE"  
330 PRINT "THE TONALITY HIGHER.  
INPUT A"
```

30

```
340 PRINT "NEGATIVE NUMBER TO MAKE IT"
350 PRINT "LOWER. EACH UNIT CHANGES THE"
360 PRINT "TONALITY BY ONE SEMI TONE."
370 INPUT FF:CLS : GO TO 30
380 SAVE "JOY" LINE 10
1800 DATA "JOY TO THE WORLD",.25
1810 DATA 24,4,23,5,33,21,16,19,
2,67,17,8,16,4,14,4,12,8/3,19,8,
21,2,67,21,8,23,2,67,23,8,24,2,9
9,16,24,8,24,8,23,8,21,8,19,8,19
5,33
1820 DATA 17,16,16,8,24,8,24,8,2
3,8,21,8,19,8,19,5,33,17,16,16,8
,16,8,16,8,16,8,16,8,16,16,17,16
,19,16/5,99,16,17,16,16,16,16,14,8
1830 DATA 14,8,14,8,14,16,16,16,
17,16/5,99,16,16,16,14,16,12,8,2
4,4,21,8,19,5,33,17,16,16,8,17,8
,16,4,14,4,12,2
```

* Explanation of the program *

The program is identical to Program 2, except for lines 130, 380 and for the DATA list. The DATA list starts with line 1800. Therefore the RESTORE statement in line 130 refers to line 1810, where the DATA for the notes begin. The name used in line 380 is "JOY."

MARCH MILITAIRE

The Austrian composer Franz Peter Schubert (1797-1828) has created some of the most melodic and romantic music ever written. The composition presented here is his "March Militaire." It is transcribed in the key of G.

* Program 6 *

```
10 BORDER 4: PAPER 6: CLS : RE
AD N$,R
20 LET FF=0: LET TT=10: LET Z$=
"""
30 PRINT PAPER 5;"***** NO
W PLAYING ****"
40 PRINT AT 10,(31-LEN N$)/2;N
$
50 PRINT PAPER 5 ;AT 21,0;"***"
***** NOW PLAYING ****"
60 PRINT PAPER 3; INK 7;AT 20,
0;"TO STOP, PRESS ""SHIFT"" + "
BREAK"""
70 LET T=R#TT
80 READ F,U: ON ERR GO TO 120
90 IF F<>99 THEN GO TO 110
```

```
100 PAUSE T/V#60: GO TO 80
110 BEEP T/V,F+FF: GO TO 80
120 ON ERR RESET
130 RESTORE 2010: IF Z$="1" THE
N GO TO 80
140 CLS : PRINT AT 7,0;"PRESS "
"1"" TO PLAY CONTINUOUSLY"
150 PRINT /"PRESS ""2"" TO PLAY
DIFFERENTLY"
160 PRINT /"PRESS ""5"" TO STOP
"
170 PAUSE 0: LET Z$=INKEY$
180 IF Z$="1" THEN CLS : GO TO
30
190 IF Z$="2" THEN GO TO 210
200 STOP
210 CLS : PRINT AT 4,0;"YOU CAN
PLAY THIS COMPOSITION"
220 PRINT "AT A DIFFERENT TEMPO
"
230 PRINT "ORIGINAL TEMPO IS 10
"
240 PRINT "TO RETAIN THE ORIGIN
AL TEMPO."
250 PRINT "INPUT A LARGER NUMBE
R FOR A"
260 PRINT "SLOWER TEMPO. INPUT
A SMALLER"
270 PRINT "NUMBER FOR A FASTER
TEMPO."
280 INPUT TT
290 CLS : PRINT AT 4,0;"YOU CAN
CHANGE THE TONALITY"
300 PRINT "OF THE COMPOSITION.
INPUT 0 TO"
310 PRINT "RETAIN THE ORIGINAL
TONALITY."
320 PRINT "INPUT A POSITIVE NUM
BER TO MAKE"
330 PRINT "THE TONALITY HIGHER.
INPUT A"
340 PRINT "NEGATIVE NUMBER TO M
AKE IT"
350 PRINT ."LOWER. EACH UNIT CH
ANGES THE"
360 PRINT "TONALITY BY ONE SEMI
TONE."
```

```
370 INPUT FF: CLS : GO TO 30
380 SAVE "MILITAIRE" LINE 10
2000 DATA "MARCH MILITAIRE",.08
2010 DATA 7,4,2,8,2,8,1,4,2,4,7,
4,2,8,2,8,1,4,2,4,7,4,2,4,7,4,2,
4,7,4,2,4,-1,4,2,4,7,4,2,4
2020 DATA 7,4,11,4,14,1,14,2,12,
4,11,4,9,2,11,4,9,4,7,2,9,4,11,4
,2,2,67,4,8,2,2,14,2,12,4,11,4,1
6,2,14,4
2030 DATA 11,4,12,4,14,8,12,8,11
,4,12,8,11,8,9,4,4,8,6,8,7,8,6,8
,7,8,8,8,9,4,9,8,9,8,7,4,9,4,11,
4
2040 DATA 12,4,14,2,9,4,11,4,12,
2,11,4,9,4,7,2,9,4,9,8,9,8,7,4,9
,4,11,4,12,4,14,2,6,4,7,4,9,2,67
,11,8,7,2,19,2
```

* Explanation of the program *

The program is identical to Program 2, except for lines 130, 380 and for the DATA list. The DATA list starts with line 2000. Therefore the RESTORE statement in line 130 refers to line 2010, where the DATA for the notes begin. The name used in line 380 is "MILITAIRE."

10

WOODEN SOLDIERS

The music of the German composer Robert Alexander Schumann (1810-1856) is characterized by delicacy, youthfulness and poetical imagination. The composition presented here is his playful march "Wooden Soldiers on Parade." It is transcribed in the key of G.

* Program 7 *

```
10 BORDER 4: PAPER 6: CLS : RE
AD N$,R
20 LET FF=0: LET TT=10: LET Z$"
=""
30 PRINT PAPER 5;"***** NO
W PLAYING *****"
40 PRINT AT 10,(31-LEN N$)/2;N
$
50 PRINT PAPER 5 ;AT 21,0;"***"
***** NOW PLAYING *****
60 PRINT PAPER 3; INK 7;AT 20,
0;"TO STOP," PRESS ""SHIFT"" + """
BREAK"""
70 LET T=R#TT
80 READ F,U: ON ERR GO TO 120
```

```
90 IF F<>99 THEN GO TO 110
100 PAUSE T/V*50: GO TO 80
110 BEEP T/V,F+FF: GO TO 80
120 ON ERR RESET
130 RESTORE 2210: IF Z$="1" THE
N GO TO 80
140 CLS : PRINT AT 7,0;"PRESS "
"1" TO PLAY CONTINUOUSLY"
150 PRINT '"PRESS ""2"" TO PLAY
DIFFERENTLY"
160 PRINT '"PRESS ""5"" TO STOP
"
170 PAUSE 0: LET Z$=INKEY$
180 IF Z$="1" THEN CLS : GO TO
30
190 IF Z$="2" THEN GO TO 210
200 STOP
210 CLS : PRINT AT 4,0;"YOU CAN
PLAY THIS COMPOSITION"
220 PRINT "AT A DIFFERENT TEMPO
THE"
230 PRINT "ORIGINAL TEMPO IS 10
INPUT 10"
240 PRINT "TO RETAIN THE ORIGIN
AL TEMPO."
250 PRINT "INPUT A LARGER NUMBE
R FOR A"
260 PRINT "SLOWER TEMPO. INPUT
A SMALLER"
270 PRINT "NUMBER FOR A FASTER
TEMPO."
280 INPUT TT
290 CLS : PRINT AT 4,0;"YOU CAN
CHANGE THE TONALITY"
300 PRINT "OF THE COMPOSITION.
INPUT 0 TO"
310 PRINT "RETAIN THE ORIGINAL
TONALITY."
320 PRINT "INPUT A POSITIVE NUM
BER TO MAKE"
330 PRINT "THE TONALITY HIGHER.
INPUT A"
340 PRINT "NEGATIVE NUMBER TO M
AKE IT"
350 PRINT "LOWER. EACH UNIT CH
ANGES THE"
360 PRINT "TONALITY BY ONE SEMI
TONE."
```

```
370 INPUT FF: CLS : GO TO 30
380 SAVE "SOLDIERS" LINE 10
2200 DATA "WOODEN SOLDIERS ON PA
RADE",.15
2210 DATA 11,5,33,12,16,14,4,16,
4,14,4,12,4,11,4,9,4,7,4,11,5,33
,12,16,14,4,16,4,14,4,19,4,18,4,
16,4,14,4,11,5,33,12,16
2220 DATA 14,4,16,4,14,4,12,4,11
,4,9,4,7,4,11,5,33,12,16,14,4,16,
,4,14,4,19,4,18,4,16,4,14,4,2,5,
33,4,16,6,4,4,4
2230 DATA 2,4,16,4,14,4,12,4,11
,4,2,5,33,4,16,6,4,4,4,2,4,12,4,1
,1,4,9,4,11,4,11,5,33,12,16,14,4,
16,4,14,4,12,4
2240 DATA 11,4,9,4,7,4,0,5,33,2,
16,4,4,2,4,0,4,2,4,6,4,7,2
```

* Explanation of the program *

The program is identical to Program 2, except for lines 130, 380 and for the DATA list. The DATA list starts with line 2200. Therefore the RESTORE statement in line 130 refers to line 2210, where the DATA for the notes begin. The name used in line 380 is "SOLDIERS."

1 1

O SOLE MIO

The warmth, color, melodiousness, and passion of Italian music is well reflected in the so-called "Neapolitan" songs. Written in the 19th century by various composers, Neapolitan songs are universally accepted as Italian national songs, just as if they were true folk songs.

The composition presented here is the beautiful Neapolitan song "O Sole Mio" ("My Sunshine") by Eduardo di Capua (1869-1917). It is transcribed in the key of G.

*** Program 8 ***

```
10 BORDER 4: PAPER 6: CLS : RE  
AD N$,R  
20 LET FF=0: LET TT=10: LET Z$  
=""  
30 PRINT PAPER 5;"***** NO  
W PLAYING *****"  
40 PRINT AT 10,(31-LEN N$)/2;N  
$
```

```
50 PRINT PAPER 5 ;AT 21,0; "***  
***** NOW PLAYING *****"  
60 PRINT PAPER 3; INK 7;AT 20,  
0;"TO STOP, PRESS ""SHIFT"" +  
BREAK""  
70 LET T=R#TT  
80 READ F,U: ON ERR GO TO 120  
90 IF F<>99 THEN GO TO 110  
100 PAUSE T/U#60: GO TO 80  
110 BEEP T/U,F+FF: GO TO 80  
120 ON ERR RESET  
130 RESTORE 2410: IF Z$="1" THE  
N GO TO 80  
140 CLS : PRINT AT 7,0;"PRESS "  
"1"" TO PLAY CONTINUOUSLY"  
150 PRINT "PRESS ""2"" TO PLAY  
DIFFERENTLY"  
160 PRINT "PRESS ""5"" TO STOP  
"  
170 PAUSE 0: LET Z$=INKEY$  
180 IF Z$="1" THEN CLS : GO TO  
30  
190 IF Z$="2" THEN GO TO 210  
200 STOP  
210 CLS : PRINT AT 4,0;"YOU CAN  
PLAY THIS COMPOSITION"  
220 PRINT "AT A DIFFERENT TEMPO  
THE"  
230 PRINT "ORIGINAL TEMPO IS 10  
INPUT 10"  
240 PRINT "TO RETAIN THE ORIGIN  
AL TEMPO."  
250 PRINT "INPUT A LARGER NUMBE  
R FOR A"  
260 PRINT "SLOWER TEMPO. INPUT  
A SMALLER"  
270 PRINT "NUMBER FOR A FASTER  
TEMPO."  
280 INPUT TT  
290 CLS : PRINT AT 4,0;"YOU CAN  
CHANGE THE TONALITY"  
300 PRINT "OF THE COMPOSITION.  
INPUT 0 TO"  
310 PRINT "RETAIN THE ORIGINAL  
TONALITY."  
320 PRINT "INPUT A POSITIVE NUM  
BER TO MAKE"
```

```
330 PRINT "THE TONALITY HIGHER.  
INPUT A"  
340 PRINT "NEGATIVE NUMBER TO MAKE IT"  
350 PRINT "LOWER. EACH UNIT CHANGES THE"  
360 PRINT "TONALITY BY ONE SEMI TONE."  
370 INPUT FF: CLS : GO TO 30  
380 SAVE "SOLE MIO" LINE 10  
2400 DATA "O SOLE MIO",.25  
2410 DATA 99,8,26,8,24,8,23,8,21,  
.4,19,4,19,8,21,8,23,8,19,8,18,4  
.16,4,99,8,18,8,19,8,21,8,18,9,1  
6,8,16,8/3,18,8  
2420 DATA 19,8,21,8,16,8,14,8,14  
.4,99,8,26,8,24,8,23,8,21,4,19,4  
.19,8,21,8,23,8,19,8,18,4,16,4,9  
9,8,24,8,23,8  
2430 DATA 21,8,26,8,23,8,21,8,19  
.8,21,8/3,23,8,21,24,23,24,21,24  
.19,8/3,99,8,19,8,19,8,18,16,18,  
16,14,4,14,4,99,8,18,8,18,8  
2440 DATA 16,16,16,16,12,8/5,18,  
8,18,8,16,16,16,16,12,4,12,4,12,  
8,9,8,11,8,12,8,14,4/3,99,8,14,8  
.15,8/5,12,8,19,8,15,8,14,4,14,4  
.14,8,11,8,9,8,7,8,14,8/5,11,16,  
9,32,11,32,9,16/3,6,16,7,8/5,99,  
8/3
```

* Explanation of the program *

The program is identical to Program 2, except for lines 130, 380 and for the DATA list. The DATA list starts with line 2400. Therefore the RESTORE statement in line 130 refers to line 2410, where the DATA for the notes begin. The name used in line 380 is "SOLE MIO."

12

TOREADOR SONG

There hardly exists any opera that is better known than the opera "Carmen" by the French composer Georges Bizet (1838-1875). The opera is a tragic story of love and jealousy. The scene is Spain. The main characters are Carmen, a passionate gypsy girl; Don Jose, a soldier in the Spanish army; and Escamillo, a swaggering bull-fighter.

The composition presented here is one of the most popular arias from the opera, commonly known as the "Toreador Song." It is transcribed in the key of F.

* Program 9 *

```
10 BORDER 4: PAPER 6: CLS : RE  
AD N$,R  
20 LET FF=0: LET TT=10: LET Z$  
=""  
30 PRINT PAPER 5;"***** NO'  
W PLAYING *****"
```

```
40 PRINT AT 10,(31-LEN N$)/2;N
$ 50 PRINT PAPER 5 ;AT 21,0;"***"
***** NOW PLAYING *****
60 PRINT PAPER 3; INK 7;AT 20
0, "TO STOP, PRESS ""SHIFT"" + "
BREAK """
70 LET T=R*TT
80 READ F,U: ON ERR GO TO 120
90 IF F<>99 THEN GO TO 110
100 PAUSE T/U*60: GO TO 80
110 BEEP T/U,F+FF: GO TO 80
120 ON ERR RESET
130 RESTORE 2610: IF Z$="1" THE
N GO TO 80
140 CLS : PRINT AT 7,0;"PRESS "
"1"" TO PLAY CONTINUOUSLY"
150 PRINT ""PRESS ""2"" TO PLAY
DIFFERENTLY"
160 PRINT ""PRESS ""5"" TO STOP
"
170 PAUSE 0: LET Z$=INKEY$
180 IF Z$="1" THEN CLS : GO TO
30
190 IF Z$="2" THEN GO TO 210
200 STOP
210 CLS : PRINT AT 4,0;"YOU CAN
PLAY THIS COMPOSITION"
220 PRINT "AT A DIFFERENT TEMPO
THE"
230 PRINT "ORIGINAL TEMPO IS 10
INPUT 10"
240 PRINT "TO RETAIN THE ORIGIN
AL TEMPO."
250 PRINT "INPUT A LARGER NUMBE
R FOR A"
260 PRINT "SLOWER TEMPO. INPUT
A SMALLER"
270 PRINT "NUMBER FOR A FASTER
TEMPO."
280 INPUT TT
290 CLS : PRINT AT 4,0;"YOU CAN
CHANGE THE TONALITY"
300 PRINT "OF THE COMPOSITION.
INPUT 0 TO"
310 PRINT "RETAIN THE ORIGINAL
TONALITY."
```

```

320 PRINT "INPUT A POSITIVE NUM
BER TO MAKE"
330 PRINT "THE TONALITY HIGHER.
INPUT A"
340 PRINT "NEGATIVE NUMBER TO M
AKE IT"
350 PRINT "LOWER. EACH UNIT CH
ANGES THE"
360 PRINT "TONALITY BY ONE SEMI
-TONE."
370 INPUT FF: CLS : GO TO 30
380 SAVE "TOREADOR" LINE 10
2600 DATA "TOREADOR SONG",17
2610 DATA 12,4,14,8,12,8,9,4,9,4
,9,8,7,8,9,8,10,8,9,2,10,4,7,8,1
2,8,9,2,5,4,2,8,7,8,0,2,7,4,7,8
2620 DATA 7,8,7,8,14,8,12,8,10,8
,9,8,7,8,9,8,10,8,9,2,4,4,9,8,9
,8,9,4,8,8,11,8,16,1,99,6,4,14,32
,16,32
2630 DATA 14,32,13,8,14,8,7,8,9
,8,10,4,99,6,4,9,32,10,32,9,32,5
,8,14,8,12,2,99,6,4,5,32,7,32,5,3
2,0,8,10,8,9,4
2640 DATA 7,4,5,4,12,12,12,12,12
,12,12,4,12,4,12,4,14,8,12,8,9,4
,9,4,9,8,7,8,9,8,10,8,9,2,10,4,7
,8,12,8
2650 DATA 9,2,5,4,2,8,7,8,0,2,7,
4,7,8,7,8,7,8,14,8,12,8,10,8,9,8
,7,8,9,8,10,8,9,2,4,4,9,8,9,8
2660 DATA 9,4,8,8,11,8,16,1,99,6
,4,14,32,16,32,14,32,13,8,14,8,7
,8,9,8,10,4,99,6,4,9,32,10,32,9,
32,5,8,14,8,12,2
2670 DATA 99,6,4,5,32,7,32,7,32
,0,8,10,8,9,4,7,4,5,1

```

* Explanation of the program *

The program is identical to Program 2, except for lines 130, 380 and for the DATA list. The DATA list starts with line 2600.

Therefore the RESTORE statement in line 130 refers to line 2610, where the DATA for the notes begin. The name used in line 380 is "TOREADOR."

13

VIENNA MARCH

Vienna, the capital city of Austria, is famous for its handsome buildings, magnificent palaces, beautiful parks, exquisite works of art, and the "blue" Danube river, all of which have inspired many composers to write delightful, spirited and elegant musical compositions.

The "Vienna March" by J. Schrammel presented here reflects quite well the Viennese type of music. It is transcribed in the key of C.

* Program 10 *

```
10 BORDER 4: PAPER 6: CLS : RE  
AD N$,R  
20 LET FF=0: LET TT=10: LET Z$  
=""  
30 PRINT "PAPER 5: ##### NO  
W PLAYING #####"  
40 PRINT AT 10,(31-LEN N$)/2;N  
$
```

```
50 PRINT PAPER 5 ;AT 21,0;"***  
***** NOW PLAYING *****"  
60 PRINT PAPER 3; INK 7;AT 20,  
0; "TO STOP, PRESS ""SHIFT"" + ""  
BREAK"""  
70 LET T=R*TT  
80 READ F,U: ON ERR GO TO 120  
90 IF F<>99 THEN GO TO 110  
100 PAUSE T/U+60: GO TO 80  
110 BEEP T/U,F+FF: GO TO 80  
120 ON ERR RESET  
130 RESTORE 2810: IF Z$="1" THE  
N GO TO 80  
140 CLS : PRINT AT 7,0;"PRESS "  
"1"" TO PLAY CONTINUOUSLY"  
150 PRINT "PRESS ""2"" TO PLAY  
DIFFERENTLY"  
160 PRINT "PRESS ""5"" TO STOP  
"  
170 PAUSE 0: LET Z$=INKEY$  
180 IF Z$="1" THEN CLS : GO TO  
30  
190 IF Z$="2" THEN GO TO 210  
200 STOP  
210 CLS : PRINT AT 4,0;"YOU CAN  
PLAY THIS COMPOSITION"  
220 PRINT "AT A DIFFERENT TEMPO  
THE"  
230 PRINT "ORIGINAL TEMPO IS 10  
INPUT 10"  
240 PRINT "TO RETAIN THE ORIGIN  
AL TEMPO."  
250 PRINT "INPUT A LARGER NUMBE  
R FOR A"  
260 PRINT "SLOWER TEMPO. INPUT  
A SMALLER"  
270 PRINT "NUMBER FOR A FASTER  
TEMPO."  
280 INPUT TT  
290 CLS : PRINT AT 4,0;"YOU CAN  
CHANGE THE TONALITY"  
300 PRINT "OF THE COMPOSITION.  
INPUT 0 TO"  
310 PRINT "RETAIN THE ORIGINAL  
TONALITY."  
320 PRINT "INPUT A POSITIVE NUM  
BER TO MAKE"
```

```

330 PRINT "THE TONALITY HIGHER.
INPUT A"
340 PRINT "NEGATIVE NUMBER TO MAKE IT"
350 PRINT "LOWER. EACH UNIT CHANGES THE"
360 PRINT "TONALITY BY ONE SEMI TONE."
370 INPUT FF: CLS : GO TO 30
380 SAVE "VIENNA" LINE 10
2800 DATA "VIENNA MARCH",.07
2810 DATA 7,8,7,8,7,4,7,4,99,4,8
,8,8,8,9,4,9,4,99,4,7,8,7,8,7,4,
12,4,11,4,9,4,11,1,33,7,8,7,8
2820 DATA 7,4,7,4,99,4,8,8,8,8,9
,4,9,4,99,4,7,8,7,8,7,4,17,4,16,
4,15,4,16,1,33,7,8,7,8,7,4,7,4,9
9,4
2830 DATA 8,8,8,8,9,4,9,4,99,4,7
,8,7,8,7,4,12,4,11,4,9,4,11,1,33
,14,8,14,8,14,4,12,2,12,8,12,8,1
2,4,11,2
2840 DATA 11,8,11,8,9,4,12,4,11,
4,9,4,7,4,7,8,7,8,7,4,7,4,16,1,3
3,11,4,12,4,12,4,7,4,4,4,5,2,67,
7,8,7,4
2850 DATA 7,4,7,1,17,1,33,11,4,1
2,4,11,4,9,4,5,4,4,2,67,7,8,7,4,
7,4,7,1,16,1,33,11,4,10,4,10,4,1
0,4,10,4,9,2,67
2860 DATA 14,8,14,4,14,4,15,1,16
,4,0,8,-1,8,-3,4,-5,4,-7,4,-8,4,
-10,4,-12,4,9,4,99,4,11,4,99,4,1
2,1,33

```

* Explanation of the program *

The program is identical to Program 2, except for lines 130, 380 and for the DATA list. The DATA list starts with line 2800. Therefore the RESTORE statement in line 130 refers to line 2810, where the DATA for the notes begin. The name used in line 380 is "VIENNA."

TORNA A SURRIENTO

In Chapter 11 the Neapolitan song "O Sole Mio" was presented. Another Neapolitan song is presented here. It is "Torna a Surriento" ("Return to Sorento") by Ernesto di Curtis (1875-1937).

Neapolitan songs were frequently performed in concerts by great opera singers like Caruso and Gigli and, more recently, by Luciano Pavarotti and others.

The song is transcribed here in the key of D.

* Program 11 *

```
10 BORDER 4: PAPER 6: CLS : RE
AD N$,R
20 LET FF=0: LET TT=10: LET Z$=""
30 PRINT PAPER 5;"***** NO
W PLAYING *****"
```

```
40 PRINT AT 10,(31-LEN N$)/2;N
$ 50 PRINT PAPER 5 ;AT 21,0;"***"
*** NOW PLAYING *****
60 PRINT PAPER 3; INK 7;AT 20,
0;"TO STOP, PRESS ""SHIFT"" + "
BREAK"""
70 LET T=R*T
80 READ F,U: ON ERR GO TO 120
90 IF F<>99 THEN GO TO 110
100 PAUSE T/U*60: GO TO 80
110 BEEP T/U,F+FF: GO TO 80
120 ON ERR RESET
130 RESTORE 3010: IF Z$="1" THE
N GO TO 80
140 CLS : PRINT AT 7,0;"PRESS "
"1"" TO PLAY CONTINUOUSLY"
150 PRINT '"PRESS ""2"" TO PLAY
DIFFERENTLY"
160 PRINT '"PRESS ""S"" TO STOP
"
170 PAUSE 0: LET Z$=INKEY$
180 IF Z$="1" THEN CLS : GO TO
30
190 IF Z$="2" THEN GO TO 210
200 STOP
210 CLS : PRINT AT 4,0;"YOU CAN
PLAY THIS COMPOSITION"
220 PRINT "AT A DIFFERENT TEMPO
"
230 PRINT "ORIGINAL TEMPO IS 10
"
240 PRINT "TO RETAIN THE ORIGIN
AL TEMPO."
250 PRINT "INPUT A LARGER NUMBE
R FOR A"
260 PRINT "SLOWER TEMPO. INPUT
A SMALLER"
270 PRINT "NUMBER FOR A FASTER
TEMPO."
280 INPUT TT
290 CLS : PRINT AT 4,0;"YOU CAN
CHANGE THE TONALITY"
300 PRINT "OF THE COMPOSITION.
INPUT 0 TO"
310 PRINT "RETAIN THE ORIGINAL
TONALITY."
```

```
320 PRINT "INPUT A POSITIVE NUMBER TO MAKE"
330 PRINT "THE TONALITY HIGHER.
INPUT A"
340 PRINT "NEGATIVE NUMBER TO MAKE IT"
350 PRINT "LOWER. EACH UNIT CHANGES THE"
360 PRINT "TONALITY BY ONE SEMI TONE."
370 INPUT FF:CLS : GO TO 30
380 SAVE "SORENTO" LINE 10
3000 DATA "TORNA A SORENTO",.15
3010 DATA 26,8,28,8,25,2.67,23,8
,26,4,26,2,99,8,25,8,26,8,28,8,2
5,8,23,8,21,4,21,2,19,4,22,4,26,
4,29,2.67,23,8,26,4
3020 DATA 99,8,28,8,25,2.67,25,8
,26,1.33,14,8,16,8,17,8,19,8,21,
8,17,8,21,4,21,2,19,8,21,8,22,8,
19,8,22,8,19,8,26,4
3030 DATA 26,2,26,8,28,8,29,8,28
,8,26,8,28,8,21,4,21,2,19,8,21,8
,19,8,17,8,16,8,17,8,14,1.33,26,
8,25,8,21,8,23,8
3040 DATA 25,8,21,8,23,4,23,2,25
,8,23,8,21,8,23,8,25,8,21,8,23,4
,23,2,18,8,19,8,21,8,18,8,16,8,1
4,8,19,4,19,2
3050 DATA 21,8,23,8,25,8,23,8,21
,8,25,8,18,1.33,26,8,25,8,21,8,2
3,8,25,8,21,8,23,4,23,2,28,8,26,
8,25,8,26,8,28,8
3060 DATA 25,8,26,4,26,2,26,8,28
,8,29,8,28,8,26,8,28,8,21,4,21,2
,19,8,21,8,19,8,17,8,16,8,17,8,1
4,1.33,26,8,28,8
3070 DATA 25,2.67,23,8,26,4,26,2
,99,8,25,8,26,8,28,8,25,8,23,8,2
1,4,21,2,19,4,22,4,26,4,29,2.67
,28,8,26,4,99,8,28,8,25,2.67,25,8
,26,1.33
```

* Explanation of the program *

The program is identical to

50

Program 2, except for lines 130, 380 and for the DATA list. The DATA list starts with line 3000. Therefore the RESTORE statement in line 130 refers to line 3010, where the DATA for the notes begin. The name used in line 380 is "SORENTO."

INDIGO MARCH

Of the many composers who called Vienna their home, none are known better than Johan Strauss the "Elder" (1804-1849) and his son Johan Strauss the "Younger" (1825-1899). Although they are famous mostly for their splendid waltzes, they created many other beautiful compositions as well.

The "Indigo March" presented here is by Johan Strauss the Younger. It is transcribed in the key of F.

* Program 12 *

```
10 BORDER 4: PAPER 6: CLS : RE  
AD N$,R  
20 LET FF=0: LET TT=10: LET Z$  
=""  
30 PRINT PAPER 5;"***** NO  
W PLAYING *****"  
40 PRINT AT 10,(31-LEN N$)/2;N  
$
```

```
50 PRINT PAPER 5 ;AT 21,0; "***  
***** NOW PLAYING *****"  
60 PRINT PAPER 3; INK 7;AT 20,  
0; "TO STOP, PRESS ""SHIFT"" + ""  
BREAK"""  
70 LET T=R*T  
80 READ F,U: ON ERR GO TO 120  
90 IF F<>99 THEN GO TO 110  
100 PAUSE T/U*60: GO TO 80  
110 BEEP T/U,F+FF: GO TO 80  
120 ON ERR RESET  
130 RESTORE 3210: IF Z$="1" THE  
N GO TO 80  
140 CLS : PRINT AT 7,0;"PRESS "  
"1"" TO PLAY CONTINUOUSLY"  
150 PRINT "PRESS ""2"" TO PLAY  
DIFFERENTLY"  
160 PRINT "PRESS ""5"" TO STOP  
"  
170 PAUSE 0: LET Z$=INKEY$  
180 IF Z$="1" THEN CLS : GO TO  
30  
190 IF Z$="2" THEN GO TO 210  
200 STOP  
210 CLS : PRINT AT 4,0;"YOU CAN  
PLAY THIS COMPOSITION"  
220 PRINT "AT A DIFFERENT TEMPO  
THE"  
230 PRINT "ORIGINAL TEMPO IS 10  
INPUT 10"  
240 PRINT "TO RETAIN THE ORIGIN  
AL TEMPO."  
250 PRINT "INPUT A LARGER NUMBE  
R FOR A"  
260 PRINT "SLOWER TEMPO. INPUT  
A SMALLER"  
270 PRINT "NUMBER FOR A FASTER  
TEMPO."  
280 INPUT TT  
290 CLS : PRINT AT 4,0;"YOU CAN  
CHANGE THE TONALITY"  
300 PRINT "OF THE COMPOSITION.  
INPUT 0 TO"  
310 PRINT "RETAIN THE ORIGINAL  
TONALITY."  
320 PRINT "INPUT A POSITIVE NUM  
BER TO MAKE"
```

```
330 PRINT "THE TONALITY HIGHER.  
    INPUT A"  
340 PRINT "NEGATIVE NUMBER TO MAKE IT"  
350 PRINT "LOWER. EACH UNIT CHANGES THE"  
360 PRINT "TONALITY BY ONE SEMI TONE."  
370 INPUT FF:CLS : GO TO 30  
380 SAVE "INDIGO" LINE 10  
3200 DATA "INDIGO MARCH",.15  
3210 DATA 8,16,9,8,9,8,9,5.55,8,  
16,9,8,9,8,9,5.33,9,16,12,5.33,5  
/15,9,5.33,0,16,7,8,7,8,9,5.33,8  
16,9,8,9,8,9,5.33  
3220 DATA 8,16,9,8,9,8,9,5.33,9,  
16,17,5.33,16,16,14,5.33,12,16,1  
2,16,11,16,9,16,11,16,12,5.33,8,  
16,9,8,9,8,9,5.33,8,16,9,8  
3230 DATA 9,8,9,5.33,9,16,12,5.3  
3,5,15,9,5.33,0,16,7,8,7,8,9,5.3  
3,8,16,9,8,9,8,9,5.33,8,16,9,8,9  
8,9,5.33,9,16,17,5.33  
3240 DATA 16,16,14,5.33,12,16,12  
/16,11,16,9,16,11,16,12,8,9,8,10  
/8,16,8,16,8,16,8,17,8,19,16,17,  
16,16,8,14,8,16,8,17,16  
3250 DATA 16,16,14,8,12,8,14,8,1  
6,16,14,16,12,8,9,8,10,8,16,8,16  
/8,16,8,17,8,19,16,17,16,16,8,14  
8,12,8,21,4,19,8  
3260 DATA 17,8,17,8,17,8,9,8,10,  
8,16,8,16,8,16,8,17,8,19,16,17,1  
6,16,8,14,8,16,8,17,16,16,16,14,  
8,12,8,14,8,16,16  
3270 DATA 14,15,12,8,9,8,10,8,16  
/8,16,8,16,8,17,8,19,16,17,16,16  
/8,14,8,12,8,21,4,19,8,17,8,17,8  
/17,4
```

* Explanation of the program *

The program is identical to Program 2, except for lines 130,

54

380 and for the DATA list. The DATA list starts with line 3200. Therefore the RESTORE statement in line 130 refers to line 3210, where the DATA for the notes begin. The name used in line 380 is "INDIGO."

THE BLUE DANUBE

Johan Strauss the Younger (1825-1899) is known as "The Waltz King". He composed hundreds of graceful and beautiful waltzes. He had started to make up waltzes when he was six years old. In 1867 he wrote his most famous series of waltzes, which he named "By the Beautiful Blue Danube." The first of these waltzes is presented here. It is transcribed in the key of D.

* Program 13 *

```
10 BORDER 4: PAPER 6: CLS : RE  
AD N$,R  
20 LET FF=0: LET TT=10: LET Z$  
=""  
30 PRINT PAPER 5;"*****" NO  
W PLAYING *****"  
40 PRINT AT 10,(31-LEN N$)/2;N  
$  
50 PRINT PAPER 5 ;AT 21,0;"***  
***** NOW PLAYING *****"
```

```
60 PRINT PAPER 3; INK 7; AT 20,  
0; "TO STOP, PRESS ""SHIFT"" + ""  
BREAK"""  
70 LET T=R#TT  
80 READ F,V: ON ERR GO TO 120  
90 IF F<>99 THEN GO TO 110  
100 PAUSE T/V#60: GO TO 80  
110 BEEP T/V,F+FF: GO TO 80  
120 ON ERR RESET  
130 RESTORE 3410: IF Z$="1" THE  
N GO TO 80  
140 CLS : PRINT AT 7,0;"PRESS "  
"1"" TO PLAY CONTINUOUSLY"  
150 PRINT "/"PRESS ""2"" TO PLAY  
DIFFERENTLY"  
160 PRINT "/"PRESS ""5"" TO STOP  
"  
170 PAUSE 0: LET Z$=INKEY$  
180 IF Z$="1" THEN CLS : GO TO  
30  
190 IF Z$="2" THEN GO TO 210  
200 STOP  
210 CLS : PRINT AT 4,0;"YOU CAN  
PLAY THIS COMPOSITION"  
220 PRINT "AT A DIFFERENT TEMPO  
THE"  
230 PRINT "ORIGINAL TEMPO IS 10  
INPUT 10"  
240 PRINT "TO RETAIN THE ORIGINAL  
TEMPO."  
250 PRINT "INPUT A LARGER NUMBE  
R FOR A"  
260 PRINT "SLOWER TEMPO. INPUT  
A SMALLER"  
270 PRINT "NUMBER FOR A FASTER  
TEMPO."  
280 INPUT TT  
290 CLS : PRINT AT 4,0;"YOU CAN  
CHANGE THE TONALITY"  
300 PRINT "OF THE COMPOSITION.  
INPUT 0 TO"  
310 PRINT "RETAIN THE ORIGINAL  
TONALITY."  
320 PRINT "INPUT A POSITIVE NUM  
BER TO MAKE"  
330 PRINT "THE TONALITY HIGHER.  
INPUT A"
```

```
340 PRINT "NEGATIVE NUMBER TO MAKE IT"
350 PRINT "LOWER. EACH UNIT OF ANGES THE"
360 PRINT "TONALITY BY ONE SEMI TONE."
370 INPUT FF:CLS : GO TO 30
380 SAVE "DANUBE" LINE 10
3400 DATA "THE BLUE DANUBE",.08
3410 DATA 2,4,6,4,9,4,9,4,99,4,2
1,16/3,99,16,21,16/3,99,16/5,18,
16/3,99,16,18,16/3,99,16/5,2,4,2
,4,6,4,9,4
3420 DATA 9,4,99,4,21,16/3,99,16
,21,16/3,99,16/5,19,16/3,99,16,1
9,16/3,99,16/5,1,4,1,4,4,4,11,4,
11,4,99,4,23,16/3,99,16,23,16/3,
99,16/5,19,16/3,99,16
3430 DATA 19,16/3,99,16/5,1,4,1,
4,4,4,11,4,11,4,99,4,23,16/3,99,
16,23,16/3,99,16/5,18,16/3,99,16
,18,16/3,99,16/5,2,4
3440 DATA 2,4,6,4,9,4,14,4,99,4,
26,16/3,99,16,26,16/3,99,16/5,21
,16/3,99,16,21,16/3,99,16/5,2,4,
2,4,6,4,9,4,14,4,99,4,26,16/3,99
,16
3450 DATA 26,16/3,99,16/5,23,16/
3,99,16,23,16/3,99,16/5,4,4,4,4,
7,4,11,8,99,8,11,16/15,99,16,8,1
6/3,99,16,9,16/3,99,16,18,16/15
3460 DATA 99,16,14,16/3,99,16,6,
16/3,99,16,6,2,4,16/3,99,16,11,2
,9,16/3,99,16,2,4,99,8,2,8,2,4
3470 DATA 99,4,26,8,99,8,25,8,99
,8,25,8,99,8,23,8,99,8,23,8,99,8
,23,8,99,8,23,8,99,8/3,16,8,99,8
3480 DATA 16,8,99,8,18,2,16,4,99
,4,16,8,99,8,16,8,99,8,23,2,21,4
,99,4,26,8,99,8,25,8,99,8,25,8,9
,9,8,23,8,99,8,23,8,99,8/3
3490 DATA 23,8,99,8,25,8,99,8,28
,8,99,8,26,8,99,8,26,8,99,8/3,20
,8,99,8,23,8,99,8,23,2,21,16/3,9
,9,16,20,16/5,99,16,18,8,14,8,11,
8,18,8,18,8,18,16/3,99,16,16,16/
```

```
3,99,16,9,4  
3500 DATA 99,4,9,16/3,99,16,7,4,  
99,4,9,16/3,99,16,7,4,99,4,9,16/  
3,99,16,18,16/15,99,16,16,4,9,16  
/3,99,16,6,4,99,4,9,16/3,99,16,6  
/4,99,4,9,16/3,99,16  
3510 DATA 16,16/15,99,16,14,4,9,  
16/3,99,16,7,4,99,4,9,16/3,99,16  
/7,4,99,4,9,16/3,99,16,18,16/15  
3520 DATA 99,16,16,16/3,99,16,9,  
16/3,99,16,14,16/3,99,16,16,16/3  
/99,16,18,16/3,99,16,21,2,19,16/  
3,99,16,18,8,18,8,18,16/3,99,16,  
16,16/3,99,16,14,4
```

* Explanation of the program *

The program is identical to Program 2, except for lines 130, 380 and the DATA list. The DATA list starts with line 3400. Therefore the RESTORE statement in line 130 refers to line 3410, where the DATA for the notes begin. The name used in line 380 is "DANUBE."

SILENT NIGHT

The last composition in this part of the book is the peaceful and gentle Christmas carol "Silent Night" by the Austrian composer Franz Xaver Grueber (1787-1863). It is believed to be the best loved Christmas carol of all.

This carol is transcribed in the key of C.

*** Program 14 ***

```
10 BORDER 4: PAPER 6: CLS : RE  
AD N$,R  
20 LET FF=0: LET TT=10: LET Z$  
=""  
30 PRINT PAPER 5;"***** NO  
W PLAYING *****"  
40 PRINT AT 10,(31-LEN N$)/2;N  
$  
50 PRINT PAPER 5 ;AT 21,0;"***  
***** NOW PLAYING *****"  
60 PRINT PAPER 3; INK 7;AT 20,  
0;"TO STOP, PRESS ""SHIFT"" + ""  
BREAK"""  
70 LET T=R#TT  
80 READ F,U: ON ERR GO TO 120
```

```
90 IF F<>99 THEN GO TO 110
100 PAUSE T/V#60: GO TO 80
110 BEEP T/V,F+FF: GO TO 80
120 ON ERR RESET
130 RESTORE 3610: IF Z$="1" THE
N GO TO 80
140 CLS : PRINT AT 7,0;"PRESS "
"1"" TO PLAY CONTINUOUSLY"
150 PRINT "PRESS ""2"" TO PLAY
DIFFERENTLY"
160 PRINT "PRESS ""5"" TO STOP
"
170 PAUSE 0: LET Z$=INKEY$
180 IF Z$="1" THEN CLS : GO TO
30
190 IF Z$="2" THEN GO TO 210
200 STOP
210 CLS : PRINT AT 4,0;"YOU CAN
PLAY THIS COMPOSITION"
220 PRINT "AT A DIFFERENT TEMPO
"
230 PRINT "ORIGINAL TEMPO IS 10
"
240 PRINT "TO RETAIN THE ORIGIN
AL TEMPO."
250 PRINT "INPUT A LARGER NUMBE
R FOR A"
260 PRINT "SLOWER TEMPO. INPUT
A SMALLER"
270 PRINT "NUMBER FOR A FASTER
TEMPO."
280 INPUT TT
290 CLS : PRINT AT 4,0;"YOU CAN
CHANGE THE TONALITY"
300 PRINT "OF THE COMPOSITION.
INPUT 0 TO"
310 PRINT "RETAIN THE ORIGINAL
TONALITY."
320 PRINT "INPUT A POSITIVE NUM
BER TO MAKE"
330 PRINT "THE TONALITY HIGHER.
INPUT A"
340 PRINT "NEGATIVE NUMBER TO M
AKE IT"
350 PRINT "LOWER. EACH UNIT CH
ANGES THE"
```

```
360>PRINT "TONALITY BY ONE SEMI  
-TONE."  
370 INPUT FF: CLS : GO TO 30  
380 SAVE "SILENT" LINE 10  
3600 DATA "SILENT NIGHT",.18  
3610 DATA 7,8/3,9,8,7,4,4,4,4/3,7,  
8/3,9,8,7,4,4,4/3,14,2,14,4,11,4  
/3,12,2,12,4,7,4/3,9,2,9,4,12,8/  
3,11,8,9,4,7,8/3  
3620 DATA 9,8,7,4,4,4,4/3,9,2,9,4,  
12,8/3,11,8,9,4,7,8/3,9,8,7,4,4,  
4/3,14,2,14,4,17,4,14,4,11,4,12,  
4/3,16,1,12,4  
3630 DATA 7,4,4,4,7,4,5,4,2,4,0,  
1
```

* Explanation of the program *

The program is identical to Program 2, except for lines 130, 380 and for the DATA list. The DATA list starts with line 3600. Therefore the RESTORE statement in line 130 refers to line 3610, where the DATA for the notes begin. The name used in line 380 is "SILENT."

18

MUSIC BOX 1

The program presented here is "Music Box 1." This program allows you to assemble all 14 compositions of this part of the book and to play them at will.

*** Program 15 ***

```
10 BORDER 4: PAPER 6: CLS : FO
R A=0 TO 12
20 PRINT TAB 3; INK 1;"MUSIC B
OX 1";TAB 18; INK 3;"MUSIC BOX 1
": NEXT A
30 PRINT AT 15,0; PAPER 5; // "T
HIS IS YOUR MUSIC BOX 1. PRESS
""ENTER"" TO SEE THE CONTENTS.
"
40 PAUSE 0
50 CLS : PRINT PAPER 5;"*****+
+** BOX CONTENTS *****": PRI
NT
60 FOR I=1 TO 14: RESTORE I:#20
0+800: READ N$: PRINT I;TAB 4;N$
: NEXT I
70 PRINT PAPER 5;AT 20,0;"ENTE
R THE NUMBER OF THE COMPOSISI-TION
THAT YOU WANT TO PLAY "
```

```
80 INPUT N: CLS : LET TT=10: L
ET FF=0: LET Z$=""
90 RESTORE N#200+800: READ NS,
R: LET T=R*TT
100 CLS : PRINT PAPER 5; "*****"
*** NOW PLAYING *****"; AT 2
1,0; "*****" NOW PLAYING *****
*****
110 PRINT AT 10, (31-LEN NS) /2; N
$
120 PRINT PAPER 3; INK 7; AT 20
0;"TO STOP, PRESS ""SHIFT"" + ""
BREAK"""
130 READ F,U: ON ERR GO TO 170
140 IF F>>99 THEN GO TO 160
150 PAUSE T/U#50: GO TO 130
160 BEEP T/U,F+FF: GO TO 130
170 ON ERR RESET : IF Z$="2" TH
EN RESTORE N#200+810: GO TO 130
180 CLS : PAPER 7: PRINT AT 7,0
;"PRESS ""1"" TO PLAY AGAIN."
190 PRINT "PRESS ""2"" TO PLAY
CONTINUOUSLY."
200 PRINT ;"PRESS ""3"" TO PLAY
DIFFERENTLY."
210 PRINT ;"PRESS ""0"" TO PLAY
ANOTHER"
220 PRINT "COMPOSITION.": PAPER
6
230 PAUSE 0: LET Z$=INKEY$: IF
Z$="1" OR Z$="2" THEN GO TO 90
240 IF Z$="0" THEN GO TO 50
250 CLS : PRINT "INPUT A NUMBER
FOR THE DESIRED"
260 PRINT "TEMPO. THE SUGGESTED
TEMPO IS"
270 PRINT "10: A SMALLER NUMBER
WILL MAKE"
280 PRINT "THE TEMPO FASTER; A
LARGER"
290 PRINT "NUMBER WILL MAKE IT
SLOWER."
300 INPUT TT
310 PRINT ;"INPUT A POSITIVE O
R A NEGATIVE"
320 PRINT "NUMBER FOR THE DESIRED
TONALITY."
```

```
330 PRINT "THE PROGRAMMED TONAL
ITY IS 0."
340 PRINT "EACH POSITIVE UNIT W
ILL RAISE"
350 PRINT "THE TONALITY BY ONE
SEMITONE."
360 PRINT "EACH NEGATIVE UNIT W
ILL LOWER IT"
370 PRINT "BY ONE SEMITONE."
380 INPUT FF: GO TO 90
390 SAVE "BOX 1"
1000 DATA "",1
1200 DATA "",1
1400 DATA "",1
1600 DATA "",1
1800 DATA "",1
2000 DATA "",1
2200 DATA "",1
2400 DATA "",1
2600 DATA "",1
2800 DATA "",1
3000 DATA "",1
3200 DATA "",1
3400 DATA "",1
3600 DATA "",1
```

* Explanation of the program *

The program is similar to Program 1, except as explained below.

Lines 20-30 print the title page and request to press ENTER in order to see the contents of the Music Box. Line 40 waits until a key is pressed. Lines 50 and 60 print the contents. This is done as follows.

The contents (composition names and notes) are located in the DATA lists starting with line 1000 (composition No. 1). The DATA list

for the second composition begins with line 1200, the DATA list for the third composition begins with line 1400, and so on, at 200 lines intervals.

The Music Box is initially empty, and the DATA lists contain only the empty string "" and the numeral 1. However, when DATA lists for the compositions are added to the program, the empty strings are replaced with the names of the compositions, and the numerals are replaced with the tempo rates for the compositions.

Line 60 reads and prints one by one the names N\$ and the sequential numbers I of the compositions appearing in the DATA lists. If there is an empty string "" instead of a name, only the sequential number is printed.

Line 70 requests that you enter the sequential number of the composition to be played. Line 80 accepts this number, clears the screen, and initializes the tempo modifier to TT=10, the key modifier to FF=0, and the flag to Z\$="".

Line 90 instructs the computer to READ the DATA list corresponding to the selected composition, to determine its name N\$, and its tempo rate R. Then it sets the tempo to the product of the tempo

rate R and the tempo modifier TT.

From there on the program is essentially the same as Program 1. However, the menu that appears in lines 180-220 is different from that appearing in lines 140-160 of Program 1. This is because the menu contains now two additional options: to play again and to play a different composition.

PART II

MUSIC WITH
GUITAR CHORDS



DISPLAYING GUITAR CHORDS

In this part of the book you will find several well-known beautiful songs that are eminently suitable for practicing guitar accompaniment. The programs containing these songs are written in such a manner that as the songs are played, the corresponding guitar chords are displayed on the screen. Thus, if you like to make use of these programs, you do not need to search for the proper chords while learning guitar accompaniment.

There are two ways in which you can copy the programs in this part of the book. You can copy each program individually or, preferably, first copy the "Music Box 2" program (Chapter 28) and then add to it the DATA lists from the individual programs. In this way you will have all the songs in one comprehensive program.

ON TOP OF OLD SMOKEY

The first composition for this part of the book is the American folk song "On Top of Old Smokey." The melody of this pretty love song is very similar to that of the song that appeared in recent times under the name of "Winchester Cathedral" in the repertoire of the Beatles.

The composition is transcribed in the key of C.

* Program 16 *

```
10 BORDER 4: PAPER 6: CLS : DI
M A$(17,5): READ N$,R
20 LET TT=10: LET Z$="": LET A
$(2)="C": LET A$(4)="F": LET A$(1
6)="G7"
30 PRINT PAPER 5;"***** NO
W PLAYING *****"
40 PRINT AT 10,(31-LEN N$)/2;N
$
50 PRINT PAPER 5 ;AT 21,0;"***"
***** NOW PLAYING *****"
```

```
60 PRINT PAPER 3; INK 7; AT 20, 0; "TO STOP PRESS ""SHIFT"" + ""B  
REAK"" "  
70 LET T=R#TT  
80 READ F,U: ON ERR GO TO 120:  
IF F=100 THEN PRINT AT 5,13; PA  
PER 5;A$(U): GO TO 80  
90 IF F<>99 THEN GO TO 110  
100 PAUSE T/U#60: GO TO 80  
110 BEEP T/U,F: GO TO 80  
120 ON ERR RESET  
130 RESTORE 1010: IF Z$="1" THE  
N GO TO 80  
140 CLS : PRINT AT 7,0;"PRESS "  
"1"" TO PLAY CONTINUOUSLY"  
150 PRINT "PRESS ""2"" TO PLAY  
DIFFERENTLY"  
160 PRINT "PRESS ""5"" TO STOP  
"  
170 PAUSE 0: LET Z$=INKEY$  
180 IF Z$="1" THEN CLS : GO TO  
30  
190 IF Z$="2" THEN GO TO 210  
200 STOP  
210 CLS : PRINT AT 4,0;"YOU CAN  
PLAY THIS COMPOSITION"  
220 PRINT "AT A DIFFERENT TEMPO  
THE"  
230 PRINT "ORIGINAL TEMPO IS 10  
INPUT 10"  
240 PRINT "TO RETAIN THE ORIGIN  
AL TEMPO."  
250 PRINT "INPUT A LARGER NUMBE  
R FOR A"  
260 PRINT "SLOWER TEMPO. INPUT  
A SMALLER"  
270 PRINT "NUMBER FOR A FASTER  
TEMPO."  
280 INPUT TT: CLS : GO TO 30  
380 SAVE "SMOKEY": LINE 10  
1000 DATA "ON TOP OF OLD SMOKEY"  
.08  
1010 DATA 0,4,100,2,0,4,4,4,7,4,  
100,4,12,1,33,9,.8,9,4,5,4,7,4,9  
,4,100,2,7,.5,0,4,0,4,4,4,4,7,4,10  
0,16,7,1,33,2,.8,2,8,4,8,5,4,4,4  
,2,4,100,2,0,.5
```

*** Explanation of the program ***

The program is similar to Program 1, except as follows.

Line 10 reserves a string array A\$() with 17 elements, each element is five characters long. Line 20 initializes the tempo modifier TT=10 and the flag Z\$= "" (but does not initialize the key modifier, since it is not used in this program or in other programs in this part of the book). Then line 20 assigns letter "C" to the second element of A\$(), letter "F" to the fourth element, and the symbol "G7" to the sixteenth element. They are the names of the guitar chords used in the present composition.

The rest of the program is the same as Program 1, except for three important details.

First, the program does not have the provision for changing the tonality of the composition.

Second, line 80 now checks whether the DATA list has the number 100 for the current note. If it has, then the string element No. V of A\$() is displayed on the screen. This element is the guitar chord corresponding to the part of the composition to be played next.

Third, the DATA list contains not only notes and rests, but also the markers that tell the computer when a chord has to be displayed on the screen. These markers are represented by the number 100. The number following such a marker in the DATA list is the sequential number of the element of the array A\$() that represents the needed guitar chord.

We shall use 17 different chords in this part of the book. This is why 17 elements have been reserved for A\$() in line 10. The longest chord name will be "Bflat," containing five letters. Therefore the length of the elements has been set to five. Of course, Bflat does not appear in the present composition, in which only three different chords are used. However, the program is written so that it can be used without significant modifications for any of the compositions presented in this part of the book. Therefore enough room has been reserved for the future entries.

21

THE SAINTS

One form of popular songs is the spiritual, usually a revival hymn telling a Biblical story. Although both black and white spirituals are in existence, the largest body of spirituals comes from the blacks in the South of the United States. An example of such a spiritual is "Oh! When the Saints Go Marchin' In," which is presented here.

It is transcribed in the key of C.

*** Program 17 ***

```
10 BORDER 4: PAPER 6: CLS : DI  
M A$(17,5): READ N$,R  
20 LET TT=10: LET Z$="": LET A  
$(2)="C": LET A$(4)="F": LET A$(  
12)="C7": LET A$(16)="G7"  
30 PRINT PAPER 5;"***** NO  
W PLAYING *****"  
40 PRINT AT 10,(31-LEN N$)/2;N  
$  
50 PRINT PAPER 5 ;AT 21,0;"***  
***** NOW PLAYING *****"
```

```
60 PRINT PAPER 3; INK 7; AT 20,  
0; "TO STOP, PRESS ""SHIFT"" + ""  
BREAK"""  
70 LET T=R#TT  
80 READ F,U: ON ERR GO TO 120:  
IF F=100 THEN PRINT AT 5,13; PA  
PER 5;A$(U): GO TO 80  
90 IF F<>99 THEN GO TO 110  
100 PAUSE T/U#60: GO TO 80  
110 BEEP T/U,F: GO TO 80  
120 ON ERR RESET  
130 RESTORE 1210: IF Z$="1" THE  
N GO TO 80  
140 CLS : PRINT AT 7,0;"PRESS "  
"1"" TO PLAY CONTINUOUSLY"  
150 PRINT "/PRESS ""2"" TO PLAY  
DIFFERENTLY"  
160 PRINT "/PRESS ""S"" TO STOP  
"  
170 PAUSE 0: LET Z$=INKEY$  
180 IF Z$="1" THEN CLS : GO TO  
30  
190 IF Z$="2" THEN GO TO 210  
200 STOP  
210 CLS : PRINT AT 4,0;"YOU CAN  
PLAY THIS COMPOSITION"  
220 PRINT "AT A DIFFERENT TEMPO  
THE"  
230 PRINT "ORIGINAL TEMPO IS 10  
INPUT 10"  
240 PRINT "TO RETAIN THE ORIGIN  
AL TEMPO."  
250 PRINT "INPUT A LARGER NUMBE  
R FOR A"  
260 PRINT "SLOWER TEMPO. INPUT  
A SMALLER"  
270 PRINT "NUMBER FOR A FASTER  
TEMPO."  
280 INPUT TT: CLS : GO TO 30  
380 SAVE "SAINTS" LINE 10  
1200 DATA "THE SAINTS",.08  
1210 DATA 0,4,4,4,5,4,100,2,7,.8  
.0,4,4,4,5,4,7,.8,0,4,4,4,5,4,7,  
2,4,2,0,2,4,2,100,16,4,4,2,1,4,4  
.4,4,2,4  
1220 DATA 100,2,0,2,0,2,100,12,4  
.2,7,4,7,4,7,4,100,4,5,1,4,4,5,4  
.100,2,7,2,4,2,100,16,0,2,2,2,10  
0,2,0,.8
```

*** Explanation of the program ***

The program is the same as Program 16, except for the DATA list and for the following modifications. The chord "C7" has been added in line 20. The RESTORE statement in line 130 refers to line 1210. The name of the composition in line 380 is "SAINTS." The DATA list starts with line 1200.

CARELESS LOVE

The authors of folk songs are usually unknown. However, sometimes both the author of the music and the author of the words are known. Such is the case with the American folk song "Careless Love" whose music was composed by H. Lowes, and whose words were written by C. Raleigh.

This song is transcribed here in the key of C.

*** Program 18 ***

```
10 BORDER 4: PAPER 6: CLS : DI  
M A$(17,5): READ N$,R  
20 LET TT=10: LET Z$="": LET A  
$(2)="C": LET A$(4)="F": LET A$(  
9)="Fm": LET A$(11)="A7": LET A$  
(12)="C7": LET A$(13)="D7": LET  
A$(16)="G7"  
30 PRINT PAPER 5;"***** NO  
W PLAYING *****"  
40 PRINT AT 10,(31-LEN N$)/2;N  
$
```

```
50 PRINT PAPER 5 ;AT 21,0;"***  
***** NOW PLAYING *****  
60 PRINT PAPER 3; INK 7;AT 20,  
0; "TO STOP, PRESS ""SHIFT"" + "",  
BREAK"""  
70 LET T=R#TT  
80 READ F,U: ON ERR GO TO 120:  
IF F=100 THEN PRINT AT 5,13; PA  
PER 5;A$(U): GO TO 80  
90 IF F<>99 THEN GO TO 110  
100 PAUSE T/U*.50: GO TO 80  
110 BEEP T/U,F: GO TO 80  
120 ON ERR RESET  
130 RESTORE 1410: IF Z$="1" THE  
N GO TO 80  
140 CLS : PRINT AT 7,0;"PRESS "  
"1"" TO PLAY CONTINUOUSLY"  
150 PRINT "/PRESS ""2"" TO PLAY  
DIFFERENTLY"  
160 PRINT "/PRESS ""5"" TO STOP  
"  
170 PAUSE 0: LET Z$=INKEY$  
180 IF Z$="1" THEN CLS : GO TO  
30  
190 IF Z$="2" THEN GO TO 210  
200 STOP  
210 CLS : PRINT AT 4,0;"YOU CAN  
PLAY THIS COMPOSITION"  
220 PRINT "AT A DIFFERENT TEMPO  
THE"  
230 PRINT "ORIGINAL TEMPO IS 10  
INPUT 10"  
240 PRINT "TO RETAIN THE ORIGIN  
AL TEMPO."  
250 PRINT "INPUT A LARGER NUMBE  
R FOR A"  
260 PRINT "SLOWER TEMPO. INPUT  
A SMALLER"  
270 PRINT "NUMBER FOR A FASTER  
TEMPO."  
280 INPUT TT: CLS : GO TO 30  
380 SAVE "CARELESS" LINE 10  
1400 DATA "CARELESS LOVE",.08  
1410 DATA 100,2,4,1.33,0,4,100,1  
6,-1,4,-5,4,-1,4,2,4,100,2,0,.5,  
4,1.33,5,4,100,11,7,4,7,4,9,4,7,
```

```
4,100,13,2,.5,100,2,4,1.33,5,4,1  
00,12,7,1.33,7,4,100,4,9,2,5,2  
1420 DATA 100,9,0,1.33,5,4,100,2  
4,1.33,0,4,100,16,-1,4,-6,4,-1,  
4,2,4,100,2,0,.5
```

* Explanation of the program *

The program is the same as Program 16, except for the DATA list and for the following modifications. The chords "Fm", "A7", "C7", and "D7" have been added in line 20. The RESTORE statement in line 130 refers to line 1410. The name of the composition in line 380 is "CARELESS." The DATA list starts with line 1400.

**OH!
NO JOHN, NO**

Folk songs are songs that became a common heritage of a people or a nation. Different countries and localities develop folk songs characteristic for each country or locality. Great composers of classical music frequently incorporated folk melodies in their compositions, thus giving these compositions a distinct national or local color.

The composition presented here is the English folk song "Oh! No John, No." It is transcribed in the key of C.

*** Program 19 ***

```
10 BORDER 4: PAPER 6: CLS : DI  
M A$(17,5): READ N$,R  
20 LET TT=10: LET Z$="": LET A  
$(2) ="C": LET A$(4) ="F": LET A$(  
5) ="G": LET A$(6) ="Am": LET A$(8)  
)="Dm": LET A$(16) ="G7"
```

```
30 PRINT PAPER 5;"***** NO
W PLAYING *****"
40 PRINT AT 10,(31-LEN N$)/2;N
$
50 PRINT PAPER 5 ;AT 21,0;"***"
*** NOW PLAYING *****
60 PRINT PAPER 3; INK 7;AT 20,
0;"TO STOP, PRESS ""SHIFT"" + ""
BREAK"""
70 LET T=R#TT
80 READ F,U: ON ERR GO TO 120:
IF F=100 THEN PRINT AT 5,13; PA
PER 5,A$(U): GO TO 80
90 IF F<>99 THEN GO TO 110
100 PAUSE T/U#60: GO TO 80
110 BEEP T/U,F: GO TO 80
120 ON ERR RESET
130 RESTORE 1610: IF Z$="1" THE
N GO TO 80
140 CLS : PRINT AT 7,0;"PRESS "
"1"" TO PLAY CONTINUOUSLY"
150 PRINT "PRESS ""2"" TO PLAY
DIFFERENTLY"
160 PRINT "PRESS ""5"" TO STOP
"
170 PAUSE 0: LET Z$=INKEY$
180 IF Z$="1" THEN CLS : GO TO
30
190 IF Z$="2" THEN GO TO 210
200 STOP
210 CLS : PRINT AT 4,0;"YOU CAN
PLAY THIS COMPOSITION"
220 PRINT "AT A DIFFERENT TEMPO
THE"
230 PRINT "ORIGINAL TEMPO IS 10
INPUT 10"
240 PRINT "TO RETAIN THE ORIGIN
AL TEMPO."
250 PRINT "INPUT A LARGER NUMBE
R FOR A"
260 PRINT "SLOWER TEMPO. INPUT
A SMALLER"
270 PRINT "NUMBER FOR A FASTER
TEMPO."
280 INPUT TT: CLS : GO TO 30
380 SAVE "JOHN" LINE 10
1600 DATA "OH! NO JOHN, NO",,09
```

```
1610 DATA -5,4,100,2,0,4,0,4,100
,16,2,4,2,4,100,2,7,4,7,8,5,8,10
0,16,4,4,2,4,100,2,-5,4,0,4,100,
5,2,4,2,4,100,2,7,4,5,4,100,16,2
,2,100,2,7,4,7,8,5,8
1620 DATA 100,6,4,4,0,4,100,8,5,
4,2,8,0,8,100,16,-1,4,-5,4,100,2
,0,4,4,4,100,4,-3,4,0,4,100,16,-
1,4,-5,4,-5,2,100,2,7,2,100,4,5,
4,2,4,100,2,4,4,0,4,100,16,-1,8,
-3,8,-5,4,100,2,0,1.33
```

* Explanation of the program *

The program is the same as Program 16, except for the DATA list and for the following modifications. The chords "G", "Am" and "Dm" have been added in line 20. The RESTORE statement in line 130 refers to line 1610. The name of the composition in line 380 is "JOHN." The DATA list starts with line 1600.

AURA LEE

The song presented here is the "Aura Lee." Its music was written by G. R. Poulton, the words were written by W. W. Fosdick. This beautiful song has been dear to the American people ever since it first appeared about a century ago. It is transcribed in the key of B flat.

* Program 20 *

```

10 BORDER 4: PAPER 6: CLS : DI
M A$(17,5): READ N$,R
20 LET TT=10: LET Z$="": LET A
$(3)="D": LET A$(4)="F": LET A$(5)
)="G": LET A$(7)="Cm": LET A$(1
0)="Gm": LET A$(12)="C7": LET A$
(13)="D7": LET A$(15)="F7": LET
A$(17)="Bflat"
30 PRINT PAPER 5;"***** NO
W PLAYING *****"
40 PRINT AT 10,(31-LEN N$)/2;N
$
50 PRINT PAPER 5 ;AT 21,0;"**+
***** NOW PLAYING *****"

```

```
    60 PRINT PAPER 3; INK 7; AT 20,  
0;"TO STOP, PRESS ""SHIFT"" + ""  
BREAK"""  
    70 LET T=R#TT  
    80 READ F,V: ON ERR GO TO 120:  
IF F=100 THEN PRINT AT 5,13; PA  
PER 5;A$(V): GO TO 80  
    90 IF F<>99 THEN GO TO 110  
100 PAUSE T/V#60: GO TO 80  
110 BEEP T/V,F: GO TO 80  
120 ON ERR RESET  
130 RESTORE 1810: IF Z$="1" THE  
N GO TO 80  
140 CLS : PRINT AT 7,0;"PRESS ""  
1"" TO PLAY CONTINUOUSLY"  
150 PRINT "PRESS ""2"" TO PLAY  
DIFFERENTLY"  
160 PRINT "PRESS ""3"" TO STOP  
"  
170 PAUSE 0: LET Z$=INKEY$  
180 IF Z$="1" THEN CLS : GO TO  
30  
190 IF Z$="2" THEN GO TO 210  
200 STOP  
210 CLS : PRINT AT 4,0;"YOU CAN  
PLAY THIS COMPOSITION"  
220 PRINT "AT A DIFFERENT TEMPO  
THE"  
230 PRINT "ORIGINAL TEMPO IS 10  
INPUT 10"  
240 PRINT "TO RETAIN THE ORIGIN  
AL TEMPO."  
250 PRINT "INPUT A LARGER NUMBE  
R FOR A"  
260 PRINT "SLOWER TEMPO. INPUT  
A SMALLER"  
270 PRINT "NUMBER FOR A FASTER  
TEMPO."  
280 INPUT TT: CLS : GO TO 30  
380 SAVE "AURA LEE" LINE 10  
1800 DATA "AURA LEE", .12  
1810 DATA 100,17,5,4,10,4,9,4,10  
,4,100,7,12,4,7,4,12,2,100,15,10  
,4,9,4,7,4,9,4,100,17,10,2,100,1  
5,5,2,100,17,5,4,10,4,9,4,10,4,1  
00,12,12,4,7,4,12,2  
1820 DATA 100,15,10,4,9,4,7,4,9,  
4,100,17,10,1,100,3,9,2.66,9,8,9
```

```
,2,100,10,10,2.66,10,8,10,2,100,  
17,14,2.66,12,8,10,4,100,4,12,4,  
100,17,14,1,14,4,100,13,14,4,100  
5,15,2.66,14,8  
1830 DATA 100,12,12,2.66,7,8,12,  
4,10,4,100,15,9,8,9,2.66,14,4,12  
,4,100,17,10,1
```

* Explanation of the program *

The program is the same as Program 16, except for the DATA list and for the following modifications. The chords appearing in line 20 are "D", "F", "G", "Cm", "Gm", "C7", "D7", "F7", and "Bflat". The RESTORE statement in line 130 refers to line 1810. The name of the composition in line 380 is "AURA LEE." The DATA list starts with line 1800.

GREENSLEEVES

There hardly is a more beautiful English folk song than the "Greensleeves." It probably originated in the 16th century. Some historians believe that it was written by Henry VIII. There is a reference to this song in Shakespeare's "The Merry Wives of Windsor," which means that it was popular at least 400 years ago. The melody has been frequently used as a Christmas carol with a new set of words.

It is transcribed here in the key of D minor.

*** Program 21 ***

```
10 BORDER 4: PAPER 6: CLS : DI  
M A$(17,5): READ N$,R  
20 LET TT=10: LET Z$="": LET A  
$(1)="A": LET A$(2)="C": LET A$(  
3)="D": LET A$(4)="F": LET A$(8)  
="Dm": LET A$(11)="A7"  
30 PRINT PAPER 5;"***** NO  
W PLAYING *****"
```

```

40 PRINT AT 10, (31-LEN N$)/2;N
$ 50 PRINT PAPER 5 ;AT 21,0;"***"
*** NOW PLAYING *****
60 PRINT PAPER 3; INK 7;AT 20,
0;"TO STOP, PRESS ""SHIFT"" + "
BREAK"""
70 LET T=R#TT
80 READ F,V: ON ERR GO TO 120:
IF F=100 THEN PRINT AT 5,13; PA
PER 5;A$(V): GO TO 80
90 IF F<>99 THEN GO TO 110
100 PAUSE T/V#60: GO TO 80
110 BEEP T/V,F: GO TO 80
120 ON ERR RESET
130 RESTORE 2010: IF Z$="1" THE
N GO TO 80
140 CLS : PRINT AT 7,0;"PRESS "
"1"" TO PLAY CONTINUOUSLY"
150 PRINT "PRESS ""2"" TO PLAY
DIFFERENTLY"
160 PRINT "PRESS ""5"" TO STOP
"
170 PAUSE 0: LET Z$=INKEY$
180 IF Z$="1" THEN CLS : GO TO
30
190 IF Z$="2" THEN GO TO 210
200 STOP
210 CLS : PRINT AT 4,0;"YOU CAN
PLAY THIS COMPOSITION"
220 PRINT "AT A DIFFERENT TEMPO
THE"
230 PRINT "ORIGINAL TEMPO IS 10
INPUT 10"
240 PRINT "TO RETAIN THE ORIGIN
AL TEMPO."
250 PRINT "INPUT A LARGER NUMBE
R FOR A"
260 PRINT "SLOWER TEMPO. INPUT
A SMALLER"
270 PRINT "NUMBER FOR A FASTER
TEMPO."
280 INPUT TT: CLS : GO TO 30
380 SAVE "GREENSLEEV" LINE 10
2000>DATA "GREENSLEEVES",.2
2010 DATA 2,4,100,8,5,2,7,4,9,2,
67,10,8,9,4,100,2,7,2,4,4,0,2,67

```

```
,2,8,4,4,100,8,5,2,2,4,2,2,67,1,  
8,2,4,100,1,4,2,1,4,-3,2,2,4  
2020 DATA 100,8,5,2,7,4,9,2,67,1  
0,8,9,4,100,2,7,2,4,4,0,2,67,2,8  
4,4,100,8,5,2,67,4,8,2,4,100,11  
1,2,67,-2,8,1,4,100,8,2,67,100  
4,12,1,33,12,2,67,11,8  
2030 DATA 9,4,100,2,7,2,4,4,0,2,  
67,2,8,4,4,100,8,5,2,2,4,2,2,67,  
1,8,2,4,100,1,4,2,1,4,-3,1,33,10  
0,4,12,1,33,12,2,67,11,8,9,4,100  
2,7,2,4,4  
2040 DATA 0,2,67,2,8,4,4,100,8,5  
2,67,4,8,2,4,100,11,1,2,67,-2,8  
.1,4,100,3,2,.8
```

* Explanation of the program *

The program is the same as Program 16, except for the DATA list and for the following modifications. The chords in line 20 are "A", "C", "D", "F", "Dm", and "A7". The RESTORE statement in line 130 refers to line 2010. The name of the composition in line 380 is "GREENSLEEV." The DATA list begins with line 2000.

WALTZING MATILDA

The song presented here is the famous "Waltzing Matilda." It is one of the most popular Australian songs. Its words were written in 1895 by Andrew Barton, who set them to the tune of an old marching song.

It is transcribed here in the key of C.

* Program 22 *

```
10 BORDER 4: PAPER 6: CLS : DI
M A$(17,5): READ N$,R
20 LET TT=10: LET Z$="": LET A
$(2)="C": LET A$(4)="F": LET A$(
6)="Am": LET A$(12)="C7": LET A$(
14)="E7": LET A$(16)="G7"
30 PRINT PAPER 5;"***** NO
W PLAYING *****"
40 PRINT AT 10,(31-LEN N$)/2;N
$
50 PRINT PAPER 5 ;AT 21,0;"*** "
***** NOW PLAYING *****"
```

```
60 PRINT PAPER 3; INK 7; AT 20,  
0; "TO STOP, PRESS ""SHIFT"" + ""  
BREAK"""  
70 LET T=R#TT  
80 READ F,V: ON ERR GO TO 120:  
IF F=100 THEN PRINT AT 5,13; PA  
PER 5;A$(V): GO TO 80  
90 IF F<>99 THEN GO TO 110  
100 PAUSE T/V#60: GO TO 80  
110 BEEP T/V,F: GO TO 80  
120 ON ERR RESET  
130 RESTORE 2210: IF Z$="1" THE  
N GO TO 80  
140 CLS : PRINT AT 7,0;"PRESS "  
"1"" TO PLAY CONTINUOUSLY"  
150 PRINT "PRESS ""2"" TO PLAY  
DIFFERENTLY"  
160 PRINT "PRESS ""S"" TO STOP  
"  
170 PAUSE 0: LET Z$=INKEY$  
180 IF Z$="1" THEN CLS : GO TO  
30  
190 IF Z$="2" THEN GO TO 210  
200 STOP  
210 CLS : PRINT AT 4,0;"YOU CAN  
PLAY THIS COMPOSITION"  
220 PRINT "AT A DIFFERENT TEMPO  
. THE"  
230 PRINT "ORIGINAL TEMPO IS 10  
. INPUT 10"  
240 PRINT "TO RETAIN THE ORIGIN  
AL TEMPO."  
250 PRINT "INPUT A LARGER NUMBE  
R FOR A"  
260 PRINT "SLOWER TEMPO. INPUT  
A SMALLER"  
270 PRINT "NUMBER FOR A FASTER  
TEMPO."  
280 INPUT TT: CLS : GO TO 30  
380 SAVE "MATILDA" LINE 10  
2200 DATA "WALTZING MATILDA",.2  
2210 DATA 100,2,4,8,4,8,4,8,4,8,  
100,14,2,4,2,4,100,6,0,8,2,8,4,8  
,0,8,100,4,-3,8,-1,8,0,4,100,2,-  
5,4,0,8,4,8,7,4,7,8,7,8,7,8  
2220 DATA 7,8,5,8,4,8,100,16,2,4  
,0,8,2,8,100,2,4,4,4,8,4,8,100,1  
4,2,4,2,4,100,6,0,8,2,8,4,8,0,8,
```

```
100,4,-3,8,-1,8,0,4,100,2,-5,4,0
,8
2230 DATA 4,8,7,4,5,8,4,8,100,16
,2,4,2,8,2,8,100,2,0,2,7,4,7,8,7
,8,100,12,7,4,4,4,100,4,12,4,12,
8,12,8,11,4,9,4,100,2,7,4,7,8
2240 DATA 7,8,9,4,7,8,7,8,9,4,5,
8,4,8,100,16,2,4,0,8,2,8,100,2,4
,4,4,8,4,8,100,14,2,4,2,4,100,6,
0,8,2,8,4,8,0,8,100,4,-3,8
2250 DATA -1,8,0,4,100,2,-5,4,0,
8,4,8,7,4,5,8,4,8,100,16,2,4,2,8
,2,8,100,2,0,2
```

* Explanation of the program *

The program is the same as Program 16, except for the DATA list and for the following modifications. The chords in line 20 are "C", "F", "Am", "C7", "E7", and "G7". The RESTORE statement in line 130 refers to line 2210. The name of the composition in line 380 is "MATILDA." The DATA list starts with line 2200.

THE TAVERN IN THE TOWN

The song presented here is "The Tavern in the Town," variably described as a soldier's song or as a student's song. Actually it is a Cornish folk song.

This song became very popular in many countries during and after World War II. Its words were translated in several languages. In Russia it was frequently performed by Leonid Utesov, one of the most popular Russian band leaders and singers of the war period.

The song is transcribed here in the key of C.

* Program 23 *

```
10 BORDER 4: PAPER 6: CLS : DI
M A$(17,5): READ N$,R
20 LET TT=10: LET Z$="": LET A
$(2)="C": LET A$(4)="F": LET A$(
5)="G": LET A$(16)="G7"
```

```
30 PRINT PAPER 5;"***** NO
U PLAYING ****"
40 PRINT AT 10,(31-LEN N$)/2;N
*
50 PRINT PAPER 5 ;AT 21,0;"***"
***** NOW PLAYING ****"
60 PRINT PAPER 3; INK 7;AT 20,
0;"TO STOP, PRESS ""SHIFT"" + """
BREAK"""
70 LET T=R#TT
80 READ F,U: ON ERR GO TO 120:
IF F=100 THEN PRINT AT 5,13; PA
PER 5;A$(V): GO TO 80
90 IF F<>99 THEN GO TO 110
100 PAUSE T/U#50: GO TO 80
110 BEEP T/U,F: GO TO 80
120 ON ERR RESET
130 RESTORE 2410: IF Z$="1" THE
N GO TO 80
140 CLS : PRINT AT 7,0;"PRESS "
"1"" TO PLAY CONTINUOUSLY"
150 PRINT "PRESS ""2"" TO PLAY
DIFFERENTLY"
160 PRINT "PRESS ""5"" TO STOP
"
170 PAUSE 0: LET Z$=INKEY$
180 IF Z$="1" THEN CLS : GO TO
30
190 IF Z$="2" THEN GO TO 210
200 STOP
210 CLS : PRINT AT 4,0;"YOU CAN
PLAY THIS COMPOSITION"
220 PRINT "AT A DIFFERENT TEMPO
THE"
230 PRINT "ORIGINAL TEMPO IS 10
INPUT 10"
240 PRINT "TO RETAIN THE ORIGIN
AL TEMPO."
250 PRINT "INPUT A LARGER NUMBE
R FOR A"
260 PRINT "SLOWER TEMPO. INPUT
A SMALLER"
270 PRINT "NUMBER FOR A FASTER
TEMPO."
280 INPUT TT: CLS : GO TO 30
380 SAVE "TAVERN" LINE 10
2400 DATA "THE TAVERN IN THE TOW
N",.08
```

```
2410 DATA 7,4,100,2,7,1,33,7,4,9,  
4,7,4,6,4,7,4,4,2,7,2,67,7,8,7,  
1,7,1,33,7,4,9,4,7,4,6,4,7,4,100  
5,2,2,7,2,67,7,8  
2420 DATA 7,4,5,4,4,4,2,4,100,2,  
0,2,4,2,7,2,12,2,100,4,14,4,12,4  
,11,4,12,4,9,1,33,12,4,100,16,11  
,1,33,11,4,11,4,7,4,9,4,11,4  
2430 DATA 100,2,12,2,12,2,67,12,  
8,12,2,7,4,6,4,100,5,5,4,11,4,11  
,4,11,4,11,4,7,4,5,4,2,4,100,2,0  
,4,12,4,12,4,12,4,12,4,7,4  
2440 DATA 4,4,0,4,100,5,-1,4,11,  
4,11,2,67,11,8,11,4,7,4,9,4,11,4  
,100,2,12,2,100,4,9,2,100,2,7,1.  
33,7,4,7,1,33,7,4,9,4,7,4,6,4,7,  
4  
2450 DATA 4,4,7,4,7,4,7,4,7,1,33  
7,4,7,1,33,7,4,9,4,7,4,6,4,7,4,  
100,5,2,2,7,2,67,7,8,7,4,5,4,4,4  
,2,4,100,2,0,2  
2460 DATA 4,2,7,2,12,2,67,12,8,1  
00,4,14,4,12,4,11,4,12,4,9,1,33,  
12,4,100,16,11,1,33,11,4,11,4,7,  
4,9,4,11,4,100,2,12,2,12,2,67,12  
,8,12,1,33
```

* Explanation of the program *

The program is the same as Program 16, except for the DATA list and for the following modifications. The chord "G" has been added in line 20. The RESTORE statement in line 130 refers to line 2410. The name of the composition in line 380 is "TAVERN." The DATA list starts with line 2400.

MUSIC BOX 2

The program presented here is "Music Box 2." This program makes it possible to incorporate all the compositions contained in this part of the book into a single program, so that any of the compositions can be accessed and played when desired.

*** Program 24 ***

```
10 BORDER 4: PAPER 6: CLS : FO
R A=0 TO 12
20 PRINT TAB 3; INK 1;"MUSIC B
OX 2";TAB 18; INK 3;"MUSIC BOX 2
": NEXT A
30 PRINT AT 15,0; PAPER 5; ""T
HIS IS YOUR MUSIC BOX 2. PRESS
""ENTER"" TO SEE THE CONTENTS.
"
40 PAUSE 0: GO SUB 310
50 CLS : PRINT PAPER 5; "*****"
*** BOX CONTENTS *****": PRI
NT
60 FOR I=1 TO 8: RESTORE I:#200
+800: READ N$: PRINT I;TAB 4;N$:
NEXT I
```

```
70 PRINT PAPER 5; AT 20,0; "ENTER THE NUMBER OF THE COMPOSITION THAT YOU WANT TO PLAY"
    80 INPUT N: CLS : LET TT=10: LET Z$=""
    90 RESTORE N#200+800: READ N$, R: LET T=R#TT
    100 .CLS : PRINT PAPER 5;"*****"
    *** NOW PLAYING *****"; AT 2
    1,0; "*****" NOW PLAYING *****
    ****"
    110 PRINT AT 10,(31-LEN N$)/2; N$
    120 PRINT PAPER 3; INK 7; AT 20,
    0; "TO STOP, PRESS ""SHIFT"" + ""BREAK"""
    130 READ F,V: ON ERR GO TO 170:
    IF F=100 THEN PRINT AT 5,13; PAPER 5; A$(V): GO TO 130
    140 IF F<>99 THEN GO TO 160
    150 PAUSE T/V#60: GO TO 130
    160 BEEP T/V,F: GO TO 130
    170 ON ERR RESET: IF Z$="2" THEN RESTORE N#200+810: GO TO 130
    180 CLS : PAPER 7: PRINT AT 7,0
    ; "PRESS ""1"" TO PLAY AGAIN.

    190 PRINT "PRESS ""2"" TO PLAY CONTINUOUSLY."
    200 PRINT ; "PRESS ""3"" TO PLAY DIFFERENTLY.
    210 PRINT ; "PRESS ""0"" TO PLAY ANOTHER"
    220 PRINT "COMPOSITION.": PAPER 6
    230 PAUSE 0: LET Z$=INKEY$: IF Z$="1" OR Z$="2" THEN GO TO 90
    240 IF Z$="0" THEN GO TO 50
    250 CLS : PRINT AT 6,0; "INPUT A NUMBER FOR THE DESIRED"
    260 PRINT "TEMPO. THE PROGRAMMED TEMPO IS"
    270 PRINT "10. A SMALLER NUMBER WILL MAKE"
    280 PRINT "THE TEMPO FASTER; A LARGER"
    290 PRINT "NUMBER WILL MAKE IT SLOWER."
```

```
300 INPUT TT: GO TO 90
310 DIM A$(17,5): LET A$(1) = "A"
: LET A$(2) = "C": LET A$(3) = "D":
LET A$(4) = "F": LET A$(5) = "G"
320 LET A$(6) = "Am": LET A$(7) =
Cm": LET A$(8) = "Dm": LET A$(9) =
Fm": LET A$(10) = "Gm"
330 LET A$(11) = "A7": LET A$(12) =
"C7": LET A$(13) = "D7": LET A$(1
4) = "E7": LET A$(15) = "F7": LET A$(
16) = "G7"
340 LET A$(17) = "Bflat"
350 RETURN
390 SAVE "BOX 2"
1000 DATA "",1
1200 DATA "",1
1400 DATA "",1
1600 DATA "",1
1800 DATA "",1
2000 DATA "",1
2200 DATA "",1
2400 DATA "",1
```

* Explanation of the program *

The program is similar to Programs 14 and 16, except as follows.

Lines 10-30 print the title page and request to press the "ENTER" key.

Line 40 waits until a key is pressed. Then it transfers control to line 310. This line first reserves a string array A\$() with 17 elements, each element being five characters long. Then it assigns to the various elements of the array 17 different chord names, after which it transfers control to line 50.

Line 50 clears the screen and together with line 60 prints the contents of the Music Box, which it reads in the DATA lists, lines 1000-2400. This part of the program is essentially the same as in Program 15.

The rest of the program is essentially the same as Program 14, except that there is no option to change the tonality of the composition.

PART III

MUSIC IN
FOUR VOICES



THE SOUND COMMAND

The SOUND command of T/S 2068 allows one to play three music voices in addition to the BEEP voice. This is done as follows. First, one must activate one, two, or all three SOUND channels. Then one must specify the desired volume (intensity) for each channel. Next, one must specify the note which a particular channel is supposed to play; two numbers are required for each note: one is called "fine frequency," the other is called "coarse frequency." Next one may specify the "envelope" and the "period" (we shall not use this facility here). Finally one must specify the duration of the notes generated by the SOUND command.

As one can see, considerable work is needed to make use of the

SOUND command. Therefore the programs that make use of this command are much longer than those that play simply the BEEP music. For this reason only five compositions which play music with the aid of the SOUND command are presented in this book.

The programs that follow can be copied individually or, preferably, can be incorporated into "Music Box 3." In the latter case, the "Music Box 3" program should be copied first, and then the DATA lists from the individual programs should be added to it.

Note:

Unlike the BEEP signals, no SOUND signals come out of the MIC socket of T/S 2068. The SOUND music is supposed to be played through the internal speaker of T/S 2068, which is located underneath the computer, in its left side. For better sound quality, the computer should be supported fairly high about the table, so that the sound of the speaker could easily escape. However, for best results one should place a small microphone below the computer's speaker and deliver the signals from the microphone to a good audio system.

If such an arrangement is used, the computer and the microphone must be acoustically shielded from the speakers of the audio system in order to prevent a feedback interference.

THE SHEPHERDESS

Our first composition utilizing the SOUND command is a lovely French folk song, "The Shepherdess." The song is quite short, so that the DATA list for it is not too difficult to copy. It is transcribed in the key of G.

* Program 25 *

```

10 BORDER 4: PAPER 6: CLS : RE
AD N$,R
20 LET TT=10: LET Z$=""
30 PRINT PAPER 5;"***** NO
W PLAYING *****"
40 PRINT AT 10,(31-LEN N$)/2;N
$
50 PRINT PAPER 5 ;AT 21,0;"***
***** NOW PLAYING *****
60 PRINT PAPER 3; INK 7;AT 20,
0;"TO STOP PRESS ""SHIFT"" + ""B
REAK"""
70 LET T=R*TT: SOUND 7,56;8,15
;9,15;10,15
80 READ AF,AC,BF,BC,CF,CC,F,U:
ON ERR GO TO 130: IF AF<0 THEN
GO TO 100.
90 SOUND 0,AF;1,AC;2,BF;3,BC;4
,CF;5,CC

```

```
100 IF F<>99 THEN GO TO 120
110 PAUSE T/V*60: GO TO 80
120 BEEP T/V,F: GO TO 80
130 ON ERR RESET : SOUND 7,63
140 RESTORE 2010: IF Z$="1" THE
N GO TO 70
150 CLS : PRINT AT 7,0;"PRESS "
"1"" TO PLAY CONTINUOUSLY"
160 PRINT "PRESS ""2"" TO PLAY
DIFFERENTLY"
170 PRINT "PRESS ""5"" TO STOP
"
180 PAUSE 0: LET Z$=INKEY$
190 IF Z$="1" THEN CLS : GO TO
30
200 IF Z$="2" THEN GO TO 220
210 STOP
220 CLS : PRINT AT 4,0;"YOU CAN
PLAY THIS COMPOSITION"
230 PRINT "AT A DIFFERENT TEMPO
THE"
240 PRINT "ORIGINAL TEMPO IS 10
INPUT 10"
250 PRINT "TO RETAIN THE ORIGIN
AL TEMPO."
260 PRINT "INPUT A LARGER NUMBE
R FOR A"
270 PRINT "SLOWER TEMPO. INPUT
A SMALLER"
280 PRINT "NUMBER FOR A FASTER
TEMPO."
290 INPUT TT: CLS : GO TO 30
380 SAVE "SHEPHERDES" LINE 10
2000 DATA "THE SHEPHERDESS",.1
2010 DATA 0,0,0,0,0,0,14,8,221,0
,23,1,23,1,19,4,209,0,209,0,209,
0,21,8,186,0,186,0,186,0,23,4,20
9,0,209,0,209,0,21,8,221,0,23,1,
23,1,19,2,67,-1,0,0,0,0,0,19,4,-
1,0,0,0,0,0,14,8,209,0,23,1,23,1
,16,4,0,0,0,0,0,0,0,16,8
2020 DATA 221,0,23,1,23,1,14,8,-
1,0,0,0,0,0,14,8,0,0,0,0,0,0,12,
8,234,0,23,1,23,1,16,4,0,0,0,0,0
,0,16,8,221,0,23,1,21,1,14,4,0,0
,0,0,0,0,14,8,221,0,221,0,221,0
,19,4,186,0,186,0,186,0,21,8,139,
0,139,0,139,0,23,4
```

```

2030 DATA 186,0,186,0,186,0,21,8
,221,0,221,0,221,0,19,2,67,-1,0,
23,1,116,1,19,4,0,0,0,0,0,0,26,8
,221,0,23,1,116,1,23,4,0,0,0,0,0,0
,0,19,8,209,0,39,1,116,1,21,4,0,
0,0,0,0,14,8,186,0,221,0,221,0
19,4,0,0,0,0,0,0,19,8
2040 DATA -1,0,23,1,186,0,19,4,-
1,0,0,0,0,26,8,221,0,23,1,116,
1,23,4,0,0,0,0,0,19,8,209,0,39
,1,116,1,21,4,0,0,0,0,0,14,8,1
86,0,221,0,221,0,19,2,0,0,0,0,0,0
0,99,8
2050 DATA 0,0,0,0,0,0,0,14,8,221,0
,23,1,23,1,19,4,209,0,209,0,209,
0,21,8,186,0,186,0,186,0,23,4,20
9,0,209,0,209,0,21,8,221,0,23,1,
23,1,19,2,67,-1,0,0,0,0,0,19,4,-
1,0,0,0,0,14,8,209,0,23,1,23,1
16,4,0,0,0,0,0,0,0,16,8
2060 DATA 221,0,23,1,23,1,14,8,-
1,0,0,0,0,14,8,0,0,0,0,0,0,0,12,
8,234,0,23,1,23,1,16,4,0,0,0,0,0,0
,0,16,8,221,0,23,1,21,1,14,4,0,0
,0,0,0,14,8,221,0,221,0,221,0,
19,4,186,0,186,0,186,0,21,8,139,
0,139,0,139,0,23,4
2070 DATA 186,0,186,0,186,0,21,8
,221,0,221,0,221,0,19,2,67,-1,0,
23,1,116,1,19,4,0,0,0,0,0,0,26,8
,221,0,23,1,116,1,23,4,0,0,0,0,0,0
,0,19,8,209,0,39,1,116,1,21,4,0,
0,0,0,0,14,8,186,0,221,0,221,0
19,4,0,0,0,0,0,0,19,8
2080 DATA -1,0,23,1,186,0,19,4,-
1,0,0,0,0,26,8,221,0,23,1,116,
1,23,4,0,0,0,0,0,19,8,209,0,39
,1,116,1,21,4,0,0,0,0,0,14,8,1
86,0,221,0,221,0,19,2,0,0,0,0,0,0
0,99,8

```

* Explanation of the program *

Lines 10-60 are the same as in Program 1, except that the key modifier FF is not used.

Line 70 sets the tempo, just as in Program 1. Then it activates all three SOUND channels and sets the volume of each channel to 15, the maximum value possible.

Line 80 reads from the DATA list the fine and coarse frequency for the notes of the three channels (the channels are denoted as A, B and C), and also reads the notes and their values for the BEEP channel. If there are no more data in the DATA list, control is transferred to line 130. Otherwise it checks whether the fine frequency for the first SOUND channel (channel A) is negative. If the fine frequency is negative, the SOUND notes (or rests) are sustained and control is transferred to line 100. If the fine frequency is positive, line 90 is executed.

Line 90 causes the three SOUND channels to play the notes that have been read in the DATA list for the respective channels. Lines 100-120 are the usual lines for playing the BEEP notes.

Line 130 removes the ON ERR restriction, just as in Program 1, and then switches off all SOUND channels.

Lines 140-380 are the same as in Program 1, except that there is

108

no option for changing the tonality of the composition.

The DATA list starts with line 2000, which contains the name of the composition and the tempo rate. Lines 2010-2080 contain the data for the notes of the composition. The data are arranged in groups of four pairs. The first three pairs represent the fine and coarse frequencies for the three SOUND channels; the last pair represents the note and its value (duration) for the BEEP channel.

PRELUDE

The prelude was originally a short composition that served as an introduction to a longer, complete composition. However, many composers gave the name of prelude to short independent compositions which were supposed to be played by themselves.

The composition presented here is the Prelude Op. 28, No. 7 by the Polish composer Frederic Chopin (1810-1849). It is transcribed in its original key of A.

* Program 26 *

```
10 BORDER 4: PAPER 6: CLS : RE  
AD N$,R  
20 LET TT=10: LET Z$=""  
30 PRINT PAPER 5;"***** NO  
W PLAYING *****"  
40 PRINT AT 10,(31-LEN N$)/2;N  
$  
50 PRINT PAPER 5 ;AT 21,0;"***  
***** NOW PLAYING *****"
```

```
50 PRINT PAPER 3; INK 7; AT 20,  
0; "TO STOP PRESS ""SHIFT"" + ""B  
REAK"""  
70 LET T=R*TT: SOUND 7,56;8,15  
;9,15;10,15  
80 READ AF,AC,BF,BC,CF,CC,F,U:  
ON ERR GO TO 130: IF AF<0 THEN  
GO TO 100  
90 SOUND 0,AF;1,AC;2,BF;3,BC;4  
,CF;5,CC  
100 IF F<>99 THEN GO TO 120  
110 PAUSE T/U*60: GO TO 80  
120 BEEP T/U,F: GO TO 80  
130 ON ERR RESET : SOUND 7,63  
140 RESTORE 3010: IF Z$="1" THE  
N GO TO 70  
150 CLS : PRINT AT 7,0;"PRESS "  
"1"" TO PLAY CONTINUOUSLY"  
160 PRINT ""PRESS ""2"" TO PLAY  
DIFFERENTLY"  
170 PRINT ""PRESS ""5"" TO STOP  
"  
180 PAUSE 0: LET Z$=INKEY$  
190 IF Z$="1" THEN CLS : GO TO  
30  
200 IF Z$="2" THEN GO TO 220  
210 STOP  
220 CLS : PRINT AT 4,0;"YOU CAN  
PLAY THIS COMPOSITION"  
230 PRINT "AT A DIFFERENT TEMPO  
THE"  
240 PRINT "ORIGINAL TEMPO IS 10  
. INPUT 10"  
250 PRINT "TO RETAIN THE ORIGIN  
AL TEMPO."  
260 PRINT "INPUT A LARGER NUMBE  
R FOR A"  
270 PRINT "SLOWER TEMPO. INPUT  
A SMALLER"  
280 PRINT "NUMBER FOR A FASTER  
TEMPO."  
290 INPUT TT: CLS : GO TO 30  
300 SAVE "PRELUDE" LINE 10  
3000 DATA "PRELUDE BY SHOPIN",.2  
3010 DATA 0,0,0,0,0,0,4,4,47,5,4  
7,5,47,5,13,5,33,-1,0,0,0,0,0,14  
,16,7,1,116,1,151,2,11,4,7,1,116  
,1,151,2,11,4,7,1,116,1,151,2,11
```

,4,7,1,116,1,151,2,11,2,0,0,0,0,
0,0,18,4,209,0,226,3,226,3,15,5,
22,-1,0,0,0,0,0,16,16,197,0,75,1
,241,1,21,4
3020 DATA 197,1,75,1,241,1,21,4,
197,0,75,1,241,1,21,2,0,0,0,0,0,
0,13,4,138,1,47,5,47,5,10,5,33,-
1,0,0,0,0,0,11,16,39,1,186,1,151
,2,14,4,39,1,186,1,151,2,14,4,39
,1,186,1,151,2,14,2,116,1,0,0,0,
0,8,4,116,1,196,7,196,7,8,5,33
3030 DATA -1,0,0,0,0,0,0,9,16,138,
1,241,1,151,2,13,4,138,1,241,1,1
51,2,13,4,138,1,241,1,151,2,13,2
,0,0,0,0,0,4,4,47,5,47,5,47,5,
13,5,33,-1,0,0,0,0,14,16,7,1,1
16,1,151,2,11,4,7,1,116,1,151,2,
11,4,7,1,116,1,151,2,11,2
3040 DATA 0,0,0,0,0,0,0,18,4,209,0
,226,3,226,3,15,5,33,-1,0,0,0,0,
0,16,16,124,0,75,1,241,1,25,4,12
4,0,75,1,241,1,25,4,117,0,138,1,
79,2,25,2,248,0,0,0,0,0,13,4,234
,0,235,6,235,6,13,5,33,-1,0,0,0,
0,0,14,16,221,0,116,1,79,2,18,4
3050 DATA 248,0,186,1,79,2,18,4,
7,1,186,1,151,2,16,2,116,1,0,0,0
,0,8,4,116,1,196,7,196,7,11,5,33
,-1,0,0,0,0,0,16,197,0,241,1,1
51,2,21,4,197,0,75,1,241,1,21,4,
197,0,75,1,241,1,21,2,0,0,0,0,0,
0,99,4,0,0,0,0,0,4,4
3060 DATA 47,5,47,5,47,5,13,5,33
,-1,0,0,0,0,0,14,16,7,1,116,1,15
1,2,11,4,7,1,116,1,151,2,11,4,7,
1,116,1,151,2,11,2,0,0,0,0,0,0,1
8,4,209,0,226,3,226,3,15,5,33,-1
,0,0,0,0,0,15,16,197,0,75,1,241,
1,21,4,197,0,75,1,241,1,21,4
3070 DATA 197,0,75,1,241,1,21,2,
0,0,0,0,0,0,13,4,138,1,47,5,47,5
,10,5,33,-1,0,0,0,0,0,11,16,39,1
,186,1,151,2,14,4,39,1,186,1,151
,2,14,4,39,1,186,1,151,2,14,2,11
6,1,0,0,0,0,8,4,116,1,196,7,196,
7,8,5,33,-1,0,0,0,0,0,9,16
3080 DATA 138,1,241,1,151,2,13,4

```
,138,1,241,1,151,2,13,4,138,1,24  
1,1,151,2,13,2,0,0,0,0,0,0,0,4,4,4  
7,5,47,5,47,5,13,5,33,-1,0,0,0,0  
0,14,16,7,1,116,1,151,2,11,4,7,  
1,116,1,151,2,11,4,7,1,116,1,151  
2,11,2,0,0,0,0,0,0,18,4  
3090 DATA 209,0,226,3,226,3,15,5  
.33,-1,0,0,0,0,16,16,124,0,75,  
1,241,1,25,4,124,0,75,1,241,1,25  
.4,117,0,138,1,79,2,25,2,248,0,0  
.0,0,0,13,4,234,0,235,6,235,6,13  
.5,33,-1,0,0,0,0,0,14,16,221,0,1  
16,1,79,2,18,4,248,0,186,1,79,2,  
18,4  
3100 DATA 7,1,186,1,151,2,18,2,1  
16,1,0,0,0,0,8,4,116,1,196,7,196  
.7,11,5,33,-1,0,0,0,0,0,9,16,197  
.0,241,1,151,2,21,4,197,0,75,1,2  
41,1,21,2,0,0,0,0,0,99,4
```

* Explanation of the program *

The program is the same as Program 25, except for the DATA list and for the following modifications. The RESTORE statement in line 140 refers to line 3010. The name of the composition in line 380 is "PRELUDE." The DATA list begins with line 3000.

SOMEWHERE IN A GARDEN

There hardly is any country that has more folk songs than Russia. Russian folk songs are characterized by a great variety of melodies, rhythms and stories. The composition presented here is a Russian folk song called "Somewhere In a Garden a Maiden Was Walking."

* Program 27 *

```
10 BORDER 4: PAPER 6: CLS : RE  
AD N$,R  
20 LET TT=10: LET Z$=""  
30 PRINT PAPER 5;"***** NO  
W PLAYING *****"  
40 PRINT AT 10,(31-LEN N$)/2;N  
$  
50 PRINT PAPER 5 :AT 21,0;"***  
***** NOW PLAYING *****"  
60 PRINT PAPER 3: INK 7:AT 20,  
0;"TO STOP PRESS ""SHIFT"" + ""B  
REAK"" "  
70 LET T=R*TT: SOUND 7,56;8,15  
;9,15;10,15
```

```
80 READ AF,AC,BF,BC,CF,CC,F,U:  
ON ERR GO TO 130: IF AF<0 THEN  
GO TO 100  
90 SOUND 0,AF;1,AC;2,BF;3,BC;4  
,CF;5,CC  
100 IF F<>99 THEN GO TO 120  
110 PAUSE T/U#60: GO TO 80  
120 BEEP T/U,F: GO TO 80  
130 ON ERR RESET : SOUND 7,63  
140 RESTORE 4010: IF Z$="1" THE  
N GO TO 70  
150 CLS : PRINT AT 7,0;"PRESS "  
"1"" TO PLAY CONTINUOUSLY"  
160 PRINT {"PRESS ""2"" TO PLAY  
DIFFERENTLY"}  
170 PRINT {"PRESS ""3"" TO STOP"}  
180 PAUSE 0: LET Z$=INKEY$  
190 IF Z$="1" THEN CLS : GO TO  
30  
200 IF Z$="2" THEN GO TO 220  
210 STOP  
220 CLS : PRINT AT 4,0;"YOU CAN  
PLAY THIS COMPOSITION"  
230 PRINT {"AT A DIFFERENT TEMPO  
THE"}  
240 PRINT {"ORIGINAL TEMPO IS 10"}  
INPUT 10"  
250 PRINT {"TO RETAIN THE ORIGIN  
AL TEMPO."}  
260 PRINT {"INPUT A LARGER NUMBE  
R FOR A"}  
270 PRINT {"SLOWER TEMPO. INPUT  
A SMALLER"}  
280 PRINT {"NUMBER FOR A FASTER  
TEMPO."}  
290 INPUT TT: CLS : GO TO 30  
380 SAVE "SOMEWHERE" LINE 10  
4000 DATA "SOMEWHERE IN A GARDEN  
",3  
4010 DATA 186,0,248,0,209,5,17,8  
, -1,0,0,0,209,5,17,8,197,0,23,1,  
241,1,16,16,-1,0,0,0,0,0,19,16,1  
-1,0,0,0,0,0,17,16,-1,0,0,0,0,0,  
16,16,248,0,57,1,232,2,14,8,-1,0  
,0,0,0,0,14,8,248,0,57,1,232,2,1  
4,16,-1,0,0,0,0,0,16,16  
4020 DATA -1,0,0,0,0,0,0,17,16,-1,
```

```

0,0,0,0,0,19,15,156,0,232,2,232,
2,21,8,186,0,248,0,248,0,17,8,19
7,0,23,1,241,1,15,15,-1,0,0,0,0,
0,15,15,-1,0,0,0,0,0,17,15,-1,0
0,0,0,0,15,15,248,0,57,1,232,2,1
4,8,-1,0,0,0,0,0,14,16
4030 DATA -1,0,0,0,0,0,0,16,16,-1,
0,0,0,0,0,19,15,-1,0,0,0,0,0,17,
15,-1,0,0,0,0,15,15,-1,0,0,0,0,0
,0,14,15,248,0,241,1,226,3,12,8
248,0,248,0,248,0,12,15,-1,0,0,0
,0,0,15,15,7,1,75,1,75,1,11,15,-
1,0,0,0,0,0,14,16
4040 DATA -1,0,0,0,0,0,0,12,15,-1,
0,0,0,0,0,11,15,241,1,241,1,241
1,9,8,-1,0,0,0,0,0,4,8,241,1,226
,3,226,3,9,15,-1,0,0,0,0,0,0,11,15
,-1,0,0,0,0,12,15,-1,0,0,0,0,0,0
,14,15,241,1,241,1,241,1,15,8,24
8,0,248,0,248,0,12,8
4050 DATA 7,1,75,1,75,1,11,15,-1
,0,0,0,0,0,14,15,-1,0,0,0,0,0,12
,15,-1,0,0,0,0,0,11,15,241,1,226
,3,226,3,9,4,155,0,209,0,248,0,2
1,15,-1,0,0,0,0,0,19,15,-1,0,0,0
,0,0,17,15,-1,0,0,0,0,0,0,15,15,18
6,0,248,0,209,5,17,8
4060 DATA -1,0,0,0,209,5,17,8,19
7,0,23,1,241,1,15,15,-1,0,0,0,0,
0,19,15,-1,0,0,0,0,0,17,15,-1,0
,0,0,0,0,15,15,248,0,57,1,232,2,1
4,8,-1,0,0,0,0,0,14,8,248,0,57,1
,232,2,14,15,-1,0,0,0,0,0,0,15,15
,-1,0,0,0,0,0,17,16
4070 DATA -1,0,0,0,0,0,0,0,19,15,156
,0,232,2,232,2,21,8,186,0,248,0,
248,0,17,8,197,0,23,1,241,1,15,1
5,-1,0,0,0,0,0,19,15,-1,0,0,0,0
,0,17,15,-1,0,0,0,0,0,15,15,248,0
,57,1,232,2,14,8,-1,0,0,0,0,0,0,14
,15,-1,0,0,0,0,0,16,16
4080 DATA -1,0,0,0,0,0,0,0,19,15,-1,
0,0,0,0,0,17,15,-1,0,0,0,0,0,15,
15,-1,0,0,0,0,0,14,15,248,0,241
,1,226,3,12,8,248,0,248,0,248,0,1
2,15,-1,0,0,0,0,0,0,15,15,7,1,75,1
,75,1,11,15,-1,0,0,0,0,0,0,14,15,-
1,0,0,0,0,0,12,16

```

```
4090 DATA -1,0,0,0,0,0,11,16,241
,1,241,1,241,1,9,8,-1,0,0,0,0,0,
4,8,241,1,226,3,226,3,9,16,-1,0,
0,0,0,0,11,16,-1,0,0,0,0,0,12,16
,-1,0,0,0,0,0,14,16,241,1,241,1,
241,1,16,8,248,0,248,0,248,0,12,
8,7,1,75,1,75,1,11,16
4100 DATA -1,0,0,0,0,0,14,16,-1,
0,0,0,0,0,12,16,-1,0,0,0,0,0,11,
16,241,1,241,1,241,1,9,8,165,0,2
21,0,221,0,20,16,165,0,209,0,248
,0,21,4
```

* Explanation of the program *

The program is the same as Program 25, except for the DATA list and for the following modifications. The RESTORE statement in line 140 refers to line 4010. The name of the composition in line 380 is "SOMEWHERE." The DATA list begins with line 4000.

STARLIGHT WALTZ

The prominent characteristics of the classical waltz are three beats per measure with a strong downbeat followed by two faint afterbeats, a songful melody, a simple accompaniment, and the presence of two or more sections sixteen measures in length. You will readily recognize these distinguishing features in the composition presented here.

The composition is the very lovely "Starlight Waltz" by the American composer C. S. Brainard. It is transcribed in the key of G.

* Program 28 *

```
10 BORDER 4: PAPER 6: CLS : RE
AD N$,R
20 LET TT=10: LET Z$=""
30 PRINT PAPER 5;"*****"
W PLAYING *****"
```

```

    40 PRINT AT 10,(31-LEN N$)/2;N
    $ 50 PRINT PAPER 5 ;AT 21,0;"***"
***** NOW PLAYING *****
    60 PRINT PAPER 3; INK 7;AT 20,
0;"TO STOP PRESS ""SHIFT"" + ""B
REAK"" "
    70 LET T=R+TT: SOUND 7,56;8,15
;9,15;10,15
    80 READ AF,AC,BF,BC,CF,CC,F,U:
ON ERR GO TO 130: IF AF<0 THEN
GO TO 100
    90 SOUND 0,AF;1,AC;2,BF;3,BC;4
,CF;5,CC
    100 IF F<>99 THEN GO TO 120
    110 PAUSE T/U*60: GO TO 80
    120 BEEP T/U,F: GO TO 80
    130 ON ERR RESET : SOUND 7,63
    140 RESTORE 5010: IF Z$="1" THE
N GO TO 70
    150 CLS : PRINT AT 7,0;"PRESS "
"1"" TO PLAY CONTINUOUSLY"
    160 PRINT ""PRESS ""2"" TO PLAY
DIFFERENTLY"
    170 PRINT ""PRESS ""5"" TO STOP
"
    180 PAUSE 0: LET Z$=INKEY$
    190 IF Z$="1" THEN CLS : GO TO
30
    200 IF Z$="2" THEN GO TO 220
    210 STOP
    220 CLS : PRINT AT 4,0;"YOU CAN
PLAY THIS COMPOSITION"
    230 PRINT "AT A DIFFERENT TEMPO
. THE"
    240 PRINT "ORIGINAL TEMPO IS 10
. INPUT 10"
    250 PRINT "TO RETAIN THE ORIGIN
AL TEMPO."
    260 PRINT "INPUT A LARGER NUMBE
R FOR A"
    270 PRINT "SLOWER TEMPO. INPUT
A SMALLER"
    280 PRINT "NUMBER FOR A FASTER
TEMPO."
    290 INPUT TT: CLS : GO TO 30
    380 SAVE "STARLIGHT" LINE 10
5000 DATA "STARLIGHT WALTZ",.2

```

5010 DATA 0,0,0,0,0,0,0,7,8,0,0,0,
0,0,0,9,8,46,2,92,4,92,4,11,8,11
6,1,186,1,0,0,99,8,116,1,186,1,0
0,11,8,232,2,209,5,209,5,12,8,1
62,1,241,1,79,2,99,8,162,1,241,1
79,2,9,8,46,2,92,4,92,4,16,8,11
6,1,186,1,0,0,14,8
5020 DATA 116,1,186,1,0,0,99,8,4
6,2,92,4,92,4,99,8,116,1,186,1,0
0,99,8,116,1,186,1,0,0,11,8,232
2,209,5,209,5,14,8,162,1,241,1
79,2,12,8,162,1,241,1,79,2,99,8
232,2,209,5,209,5,99,8,162,1,241
1,79,2,99,8,162,1,241,1,79,2,9,
8
5030 DATA 46,2,92,4,92,4,12,8,11
6,1,186,1,0,0,11,8,116,1,186,1,0
0,99,8,46,2,92,4,92,4,99,8,116,
1,186,1,0,0,7,8,116,1,186,1,0,0
9,8,46,2,92,4,92,4,11,8,116,1,18
6,1,0,0,99,8,116,1,186,1,0,0,11,
8,232,2,209,5,209,5,12,8
5040 DATA 162,1,241,1,79,2,99,8,
162,1,241,1,79,2,9,8,46,2,92,4,9
2,4,16,8,116,1,186,1,0,0,14,8,11
6,1,186,1,0,0,99,8,46,2,92,4,92,
4,99,8,116,1,186,1,0,0,99,8,116,
1,186,1,0,0,11,8,232,2,209,5,209
5,14,8,162,1,241,1,79,2,12,8
5050 DATA 162,1,241,1,79,2,99,8,
232,2,209,5,209,5,99,8,162,1,241
1,79,2,99,8,162,1,241,1,79,2,8,
8,46,2,92,4,92,4,7,8,116,1,186,1
0,0,99,8,116,1,186,1,0,0,99,8,4
6,2,92,4,92,4,99,8,116,1,186,1,0
0,7,8,116,1,186,1,0,0,9,8
5060 DATA 23,1,46,2,92,4,11,8,11
6,1,186,1,0,0,99,8,23,1,116,1,18
6,1,11,8,248,0,232,2,209,5,12,8,
162,1,241,1,79,2,99,8,162,1,241
1,79,2,9,8,209,0,46,2,92,4,16,8
221,0,116,1,186,1,14,8,116,1,186
1,0,0,99,8,46,2,92,4,92,4,99,8
5070 DATA 116,1,186,1,0,0,99,8,2
3,1,116,1,186,1,11,8,221,0,232,2
209,5,14,8,248,0,162,1,248,0,12
8,162,1,241,1,79,2,99,8,232,2,2
09,5,209,5,99,8,162,1,241,1,79,2

,99,8,39,1,162,1,241,1,9,8,248,0
,46,2,92,4,12,8,23,1,116,1,186,1
11,8
5080 DATA 116,1,186,1,0,0,99,8,4
6,2,92,4,92,4,99,8,116,1,186,1,0
,0,7,8,116,1,186,1,0,0,9,8,23,1,
46,2,92,4,11,8,116,1,186,1,0,0,9
9,8,23,1,116,1,186,1,11,8,248,0,
232,2,209,5,12,8,162,1,241,1,79,
2,99,8,162,1,241,1,79,2,9,8
5090 DATA 209,0,46,2,92,4,16,8,2
21,0,116,1,186,1,14,8,116,1,186,
1,0,0,99,8,46,2,92,4,92,4,99,8,1
16,1,186,1,0,0,99,8,23,1,116,1,1
86,1,11,8,221,0,232,2,209,5,14,8
248,0,162,1,248,0,12,8,162,1,24
1,1,79,2,99,8,232,2,209,5,209,5,
99,8
5100 DATA 162,1,241,1,79,2,4,8,1
62,1,241,1,79,2,6,8,46,2,92,4,92
,4,7,8,116,1,186,1,0,0,99,8,116,
1,186,1,0,0,99,8,46,2,92,4,0,0,9
9,4,0,0,0,0,0,99,8,186,0,68,3,
136,6,19,8,162,1,46,2,151,2,99,8
162,1,46,2,151,2,99,8
5110 DATA 68,3,136,6,136,6,99,8,
186,0,162,1,46,2,18,8,209,0,162,
1,46,2,16,8,209,0,46,2,92,4,16,8
221,0,116,1,186,1,14,8,116,1,18
6,1,0,0,99,8,46,2,92,4,92,4,99,8
116,1,186,1,0,0,99,8,23,1,116,1
186,1,11,8,221,0,232,2,209,5,14
8
5120 DATA 248,0,162,1,241,1,12,8
162,1,241,1,79,2,99,8,232,2,209
5,209,5,99,8,162,1,241,1,79,2,9
9,8,39,1,162,1,241,1,9,8,248,0,4
6,2,92,4,12,8,23,1,116,1,186,1,1
1,8,116,1,186,1,0,0,99,8,46,2,92
4,92,4,99,8,116,1,186,1,0,0,99,
8
5130 DATA 23,1,116,1,186,1,11,8,
186,0,68,3,136,6,19,8,162,1,46,2
151,2,99,8,162,1,46,2,151,2,99,
8,68,3,136,6,136,6,99,8,186,0,16
2,1,46,2,18,8,209,0,162,1,46,2,1
6,8,209,0,46,2,92,4,16,8,221,0,1
16,1,186,1,14,8,116,1,186,1,0,0,
99,8

5140 DATA 45,2,92,4,92,4,99,8,11
6,1,186,1,0,0,99,8,23,1,116,1,18
6,1,11,8,221,0,232,2,209,5,14,8
248,0,162,1,241,1,12,8,162,1,241
1,79,2,99,8,232,2,209,5,209,5,9
9,8,162,1,241,1,79,2,4,8,162,1,2
41,1,79,2,5,8,46,2,92,4,92,4,7,8
5150 DATA 118,1,186,1,0,0,99,8,1
16,1,186,1,0,0,99,8,46,2,92,4,92
4,99,8,0,0,0,0,0,7,8,46,2,92,
4,92,4,9,8,46,2,92,4,92,4,11,16,
-1,1,186,1,0,0,7,16,116,1,186,1,
0,0,5,16,-1,1,186,1,0,0,7,16,116
1,186,1,0,0,9,16
5160 DATA -1,2,209,5,209,5,11,16
232,2,209,5,209,5,12,16,-1,1,24
1,1,79,2,9,16,162,1,241,1,114,2,
8,16,-1,1,241,1,79,2,9,16,162,1,
241,1,114,2,11,16,-1,1,241,1,79,
2,12,16,46,2,92,4,92,4,16,8,116,
1,186,1,0,0,14,8,116,1,186,1,0,0
99,8
5170 DATA 45,2,92,4,92,4,99,8,18
6,1,0,0,0,0,2,16,-1,0,0,0,0,0,7,
16,116,1,186,1,0,0,11,16,-1,0,0,
0,0,0,14,16,232,2,209,5,209,5,14
8,162,1,241,1,114,2,12,8,162,1,
241,1,114,2,99,8,232,2,209,5,209
5,99,8,162,1,241,1,114,2,2,16
5180 DATA -1,1,241,1,79,2,6,16,1
62,1,241,1,114,2,9,16,-1,1,241,1
79,2,12,16,46,2,92,4,92,4,12,8,
116,1,186,1,0,0,11,8,116,1,186,1
0,0,99,8,46,2,92,4,92,4,99,8,11
6,1,186,1,0,0,7,8,116,1,186,1,0,
0,9,8,46,2,92,4,92,2,11,16
5190 DATA -1,0,0,0,0,0,0,7,16,116,
1,186,1,0,0,5,16,-1,0,0,0,0,0,7
16,116,1,186,1,0,0,9,16,-1,0,0,0,
0,0,11,16,232,2,209,5,209,5,12,
16,-1,1,241,1,79,2,9,16,162,1,24
1,1,114,2,8,16,-1,1,241,1,79,2,9
16,162,1,241,1,114,2,11,16
5200 DATA -1,1,241,1,79,2,12,16,
46,2,92,4,92,4,16,8,116,1,186,1,
0,0,14,8,116,1,186,1,0,0,99,8,46
2,92,4,92,4,99,8,186,1,0,0,0,0,

2, 16, -1, 0, 0, 0, 0, 0, 7, 16, 116, 1, 186
/ 1, 0, 0, 11, 16, -1, 0, 0, 0, 0, 0, 0, 14, 16,
232, 2, 209, 5, 209, 5, 14, 8
5210 DATA 162, 1, 241, 1, 114, 2, 99, 8, 232, 2, 20
9, 5, 209, 5, 99, 8, 162, 1, 241, 1, 114, 2
/ 1, 16, -1, 1, 241, 1, 79, 2, 2, 16, 162, 1
/ 241, 1, 114, 2, 11, 16, -1, 1, 241, 1, 79
/ 2, 9, 16, 46, 2, 92, 4, 92, 4, 7, 8, 116, 1
/ 186, 1, 0, 0, 99, 8, 116, 1, 186, 1, 0, 0,
99, 8
5220 DATA 46, 2, 92, 4, 92, 4, 99, 4, -1
/ 1, 186, 1, 0, 0, 99, 8, 165, 0, 68, 3, 136
/ 6, 19, 8, 162, 1, 46, 2, 151, 2, 99, 8, 16
2, 1, 46, 2, 151, 2, 99, 8, 68, 3, 136, 6, 1
36, 6, 99, 8, 162, 1, 46, 2, 151, 2, 21, 16
/ -1, 0, 0, 0, 0, 19, 16, 162, 1, 46, 2, 1
51, 2, 18, 16, -1, 0, 0, 0, 0, 0, 16, 16
5230 DATA 209, 0, 46, 2, 92, 4, 16, 8, 1
16, 1, 186, 1, 0, 0, 14, 8, 116, 1, 186, 1,
0, 0, 99, 8, 46, 2, 92, 4, 92, 4, 99, 8, 186
/ 1, 186, 1, 186, 1, 2, 16, 46, 2, 186, 1, 1
86, 1, 7, 16, 116, 1, 186, 1, 186, 1, 11, 1
6, 116, 1, 162, 1, 241, 1, 14, 16, 232, 2,
209, 5, 209, 5, 14, 8, 162, 1, 241, 1, 79,
2, 12, 8
5240 DATA 162, 1, 241, 1, 79, 2, 99, 8,
232, 2, 209, 5, 209, 5, 99, 8, 162, 1, 241
/ 1, 79, 2, 2, 16, -1, 0, 46, 2, 92, 4, 6, 16
/ 162, 1, 241, 1, 79, 2, 9, 16, -1, 0, 0, 0,
0, 0, 12, 16, 209, 0, 46, 2, 92, 4, 12, 8, 1
16, 1, 186, 1, 0, 0, 11, 8, 116, 1, 186, 1,
0, 0, 99, 8, 46, 2, 92, 4, 92, 4, 99, 8
5250 DATA 116, 1, 186, 1, 186, 1, 92, 4, 99, 8,
116, 1, 186, 1, 92, 4, 7, 6, 165, 0, 68, 3,
136, 6, 19, 8, 162, 1, 46, 2, 151, 2, 99, 8
/ 162, 1, 46, 2, 151, 2, 99, 8, 68, 3, 136,
6, 136, 6, 99, 8, 162, 1, 46, 2, 151, 2, 21
/ 16, -1, 0, 0, 0, 0, 0, 19, 16, 162, 1, 46,
2, 151, 2, 18, 16, -1, 0, 0, 0, 0, 0, 16, 16
5260 DATA 209, 0, 46, 2, 92, 4, 16, 8, 1
16, 1, 186, 1, 0, 0, 14, 8, 116, 1, 186, 1,
0, 0, 99, 8, 46, 2, 92, 4, 92, 4, 99, 8, 186
/ 1, 0, 0, 0, 0, 2, 16, -1, 0, 232, 2, 209, 5
/ 7, 16, 116, 1, 186, 1, 241, 1, 11, 16, -1
/ 0, 162, 1, 241, 1, 14, 16, 232, 2, 209, 5
/ 209, 5, 14, 8, 162, 1, 241, 1, 79, 2, 12,
8

5270 DATA 162,1,241,1,79,2,99,8,
232,2,209,5,209,5,99,8,162,1,241
,1,79,2,1,16,-1,0,46,2,92,4,2,16
,162,1,241,1,79,2,11,16,-1,0,0,0
,0,0,9,16,46,2,92,4,92,4,7,8,116
,1,186,1,0,0,99,8,116,1,186,1,0,
0,99,8,46,2,92,4,92,4,99,8,0,0,0
,0,0,0,99,8
5280 DATA 0,0,0,0,0,0,0,7,8,0,0,0,
0,0,0,9,8,46,2,92,4,92,4,11,8,11
6,1,186,1,0,0,99,8,116,1,186,1,0
,0,11,8,232,2,209,5,209,5,12,8,1
62,1,241,1,79,2,99,8,162,1,241,1
,79,2,9,8,46,2,92,4,92,4,16,8,11
6,1,186,1,0,0,14,8
5290 DATA 115,1,186,1,0,0,99,8,4
6,2,92,4,92,4,99,8,116,1,186,1,0
,0,99,8,116,1,186,1,0,0,11,8,232
,2,209,5,209,5,14,8,162,1,241,1,
79,2,12,8,162,1,241,1,79,2,99,8,
232,2,209,5,209,5,99,8,162,1,241
,1,79,2,99,8,162,1,241,1,79,2,9,
8
5300 DATA 46,2,92,4,92,4,12,8,11
6,1,186,1,0,0,11,8,116,1,186,1,0
,0,99,8,46,2,92,4,92,4,99,8,116
,1,186,1,0,0,7,8,116,1,186,1,0,0
,9,8,46,2,92,4,92,4,11,8,116,1,18
6,1,0,0,99,8,116,1,186,1,0,0,11,
8,232,2,209,5,209,5,12,8
5310 DATA 162,1,241,1,79,2,99,8,
162,1,241,1,79,2,9,8,46,2,92,4,9
2,4,16,8,116,1,186,1,0,0,14,8,11
6,1,186,1,0,0,99,8,46,2,92,4,92,
4,99,8,116,1,186,1,0,0,99,8,116
,1,186,1,0,0,11,8,232,2,209,5,209
,5,14,8,162,1,241,1,79,2,12,8
5320 DATA 162,1,241,1,79,2,99,8,
232,2,209,5,209,5,99,8,162,1,241
,1,79,2,99,8,162,1,241,1,79,2,8,
8,46,2,92,4,92,4,7,8,116,1,186,1
,0,0,99,8,116,1,186,1,0,0,99,8,4
6,2,92,4,92,4,99,8,116,1,186,1,0
,0,7,8,116,1,186,1,0,0,9,8
5330 DATA 23,1,46,2,92,4,11,8,11
6,1,186,1,0,0,99,8,23,1,116,1,18
6,1,11,8,248,0,232,2,209,5,12,8,
162,1,241,1,79,2,99,8,162,1,241,

```

1,79,2,9,8,209,0,46,2,92,4,16,8,
221,0,116,1,186,1,14,8,116,1,186
,1,0,0,99,8,46,2,92,4,92,4,99,8
5340 DATA 116,1,186,1,0,0,99,8,2
3,1,116,1,186,1,11,8,221,0,232,2
,209,5,14,8,248,0,162,1,248,0,12
,8,162,1,241,1,79,2,99,8,232,2,2
,09,5,209,5,99,8,162,1,241,1,79,2
,99,8,39,1,162,1,241,1,9,8,248,0
,46,2,92,4,12,8,23,1,116,1,186,1
,11,8
5350 DATA 116,1,186,1,0,0,99,8,4
6,2,92,4,92,4,99,8,116,1,186,1,0
,0,7,8,116,1,186,1,0,0,9,8,23,1,
46,2,92,4,11,8,116,1,186,1,0,0,9
9,8,23,1,116,1,186,1,11,8,248,0,
232,2,209,5,12,8,162,1,241,1,79,
2,99,8,162,1,241,1,79,2,9,8
5360 DATA 209,0,46,2,92,4,16,8,2
21,0,116,1,186,1,14,8,116,1,186,
1,0,0,99,8,46,2,92,4,92,4,99,8,1
16,1,186,1,0,0,99,8,23,1,116,1,1
86,1,11,8,221,0,232,2,209,5,14,8
,248,0,162,1,248,0,12,8,162,1,24
1,1,79,2,99,8,232,2,209,5,209,5,
99,8
5370 DATA 162,1,241,1,79,2,4,8,1
62,1,241,1,79,2,6,8,46,2,92,4,92
,4,7,8,116,1,186,1,0,0,99,8,116,
1,186,1,0,0,99,8,46,2,92,4,0,0,9
9,4,0,0,0,0,0,0,99,8

```

* Explanation of the program *

The program is the same as Program 25, except for the DATA list and for the following modifications. The RESTORE statement in line 140 refers to line 5010. The name of the composition in line 380 is "STARLIGHT." The DATA list begins with line 5000.

FRENCH SONG

The composition presented here is an old French song. It has a delicate, melancholy beauty and probably was meant to be accompanied by the lute. It is transcribed in the key of B minor.

* Program 29 *

```

10 BORDER 4: PAPER 6: CLS : RE
AD N$,R
20 LET TT=10: LET Z$="""
30 PRINT PAPER 5;"*****" NO
W PLAYING *****
40 PRINT AT 10,(31-LEN N$)/2;N
$
50 PRINT PAPER 5 ;AT 21,0;"***"
***** NOW PLAYING *****
60 PRINT PAPER 3; INK 7;AT 20,
0;"TO STOP PRESS ""SHIFT"" + ""B
REAK"""
70 LET T=R#TT: SOUND 7,56;8,15
;9,15;10,15
80 READ AF,AC,BF,BC,CF,CC,F,U:
ON ERR GO TO 130: IF AF<0 THEN
GO TO 100
90 SOUND 0,AF;1,AC;2,BF;3,BC;4
,CF;5,CC

```

```

100 IF F<>99 THEN GO TO 120
110 PAUSE T/U*60: GO TO 80
120 BEEP T/U,F: GO TO 80
130 ON ERR RESET : SOUND 7,63
140 RESTORE 6010: IF Z$="1" THE
N GO TO 70
150 CLS : PRINT AT 7,0;"PRESS "
"1"" TO PLAY CONTINUOUSLY"
160 PRINT "PRESS ""2"" TO PLAY
DIFFERENTLY"
170 PRINT "PRESS ""5"" TO STOP
"
180 PAUSE 0: LET Z$=INKEY$
190 IF Z$="1" THEN CLS : GO TO
30
200 IF Z$="2" THEN GO TO 220
210 STOP
220 CLS : PRINT AT 4,0;"YOU CAN
PLAY THIS COMPOSITION"
230 PRINT "AT A DIFFERENT TEMPO
"
240 PRINT "ORIGINAL TEMPO IS 10
"
250 PRINT "TO RETAIN THE ORIGIN
AL TEMPO."
260 PRINT "INPUT A LARGER NUMBE
R FOR A"
270 PRINT "SLOWER TEMPO. INPUT
A SMALLER"
280 PRINT "NUMBER FOR A FASTER
TEMPO."
290 INPUT TT: CLS : GO TO 30
380 SAVE "FRENCH" LINE 10
6000 DATA "MEDIEVAL FRENCH SONG"
,
2
6010 DATA 0,0,0,0,0,0,11,8,-1,0,
0,0,0,0,13,8,39,1,186,1,186,1,14
,2,-1,0,0,0,0,0,14,4,-1,0,0,0,0,
0,16,8,-1,0,0,0,0,0,14,8,75,1,18
6,1,186,1,13,2,-1,0,0,0,0,0,13,4
,-1,0,0,0,0,14,8,-1,0,0,0,0,0,0,
13,8
6020 DATA 116,1,116,1,116,1,11,4
,-1,0,0,0,0,0,11,4,186,1,186,1,1
86,1,11,4,-1,0,0,0,0,0,14,4,213,
1,213,1,213,1,13,2,79,2,79,2,79,
2,99,4,-1,0,0,0,0,0,11,8,-1,0,0,
0,0,0,13,8,39,1,186,1,186,1,14,2

```

```

-1,0,0,0,0,0,14,4
6030 DATA -1,0,0,0,0,0,16,8,-1,0
0,0,0,0,14,8,75,1,186,1,186,1,1
3,2,-1,0,0,0,0,0,13,4,-1,0,0,0,0
0,14,8,-1,0,0,0,0,0,13,8,116,1,
186,1,186,1,11,4,-1,0,0,0,0,0,13
,4,75,1,186,1,186,1,13,2,67,-1,0
0,0,0,0,11,8
6040 DATA 116,1,186,1,186,1,11,2
,0,0,0,0,0,0,99,4,-1,0,0,0,0,0,1
4,8,-1,0,0,0,0,0,16,8,248,0,116,
1,116,1,18,2,-1,0,0,0,0,0,18,4,-
1,0,0,0,0,19,8,-1,0,0,0,0,0,0,18
,8,23,1,241,1,241,1,16,2,-1,0,0,
0,0,0,16,4
6050 DATA -1,0,0,0,0,0,18,8,-1,0
0,0,0,0,16,8,39,1,186,1,186,1,1
4,4,-1,0,0,0,0,0,14,4,23,1,75,1,
75,1,13,4,-1,0,0,0,0,0,11,4,39,1
,79,2,79,2,10,2,0,0,0,0,0,0,0,0,99,4
,-1,0,0,0,0,0,11,8,-1,0,0,0,0,0,0
,13,8
6060 DATA 39,1,186,1,186,1,14,2,
-1,0,0,0,0,0,14,4,-1,0,0,0,0,0,0,1
6,8,-1,0,0,0,0,0,14,8,75,1,186,1
,186,1,13,2,-1,0,0,0,0,0,13,4,-1
0,0,0,0,0,14,8,-1,0,0,0,0,0,0,13
,8,116,1,186,1,186,1,11,4,-1,0,0
0,0,0,13,4
6070 DATA 75,1,186,1,186,1,13,2,
67,-1,0,0,0,0,0,11,8,116,1,186,1
,186,1,11,1,33

```

* Explanation of the program *

The program is the same as Program 25, except for the DATA list and for the following modifications. The RESTORE statement in line 140 refers to line 6010. The name of the composition in 380 is "FRENCH." The DATA list begins with line 6000.

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MUSIC BOX 3

Our last program is "Music Box 3." This program makes it possible to incorporate several four-voiced compositions into a single program, so that any of them can be played at will. Unfortunately, the memory of T/S 2068 is not large enough to accept all five compositions presented in this part of the book. However, there is enough room for all the compositions excluding the "Starlight Waltz," or for the "Starlight Waltz" and two other compositions. Therefore you should make two Music Boxes: one with four compositions, the other with three.

*** Program 30 ***

```
10 BORDER 4: PAPER 6: CLS : FO  
R A=0 TO 12
```

```

20 PRINT TAB 3; INK 1;"MUSIC B
OX 3";TAB 18; INK 3;"MUSIC BOX 3
": NEXT A
30 PRINT AT 15,0; PAPER 5; // "T
HIS IS YOUR MUSIC BOX 3. PRESS
""ENTER"" TO SEE THE CONTENTS.
"
40 PAUSE 0
50 CLS : PRINT PAPER 5;"*****+
*** BOX CONTENTS *****": PRI
NT ,/
60 FOR I=1 TO 5: RESTORE I#100
0+1000: READ N$: PRINT I;TAB 4;N
$: NEXT I
70 PRINT PAPER 5;AT 20,0;"ENTE
R THE NUMBER OF THE COMPOSI-TION
THAT YOU WANT TO PLAY
80 INPUT N: CLS : LET TT=10: L
ET Z$=""
90 RESTORE N#1000+1000: READ N
$,R: LET T=R#TT: SOUND 7,56;8,15
;9,15;10,15
100 CLS : PRINT PAPER 5;"*****+
** NOW PLAYING *****";AT 2
1,0;"*****+ NOW PLAYING ****+
*****"
110 PRINT AT 10,(31-LEN N$)/2;N
$
120 PRINT PAPER 3; INK 7;AT 20
0;"TO STOP, PRESS ""SHIFT"" + ""
BREAK"""
130 READ AF,AC,BF,BC,CF,CC,F,U:
ON ERR GO TO 180: IF AF<0 THEN
GO TO 150
140 SOUND 0,AF;1,AC;2,BF;3,BC;4
,CF;5,CC
150 IF F>>99 THEN GO TO 170
160 PAUSE T/V#60: GO TO 130
170 BEEP T/V,F: GO TO 130
180 ON ERR RESET : IF Z$="2" TH
EN RESTORE N#1000+1010: GO TO 13
0
190 SOUND 7,63: CLS : PAPER 7:
PRINT AT 7,0;"PRESS ""1"" TO PLA
Y AGAIN.
200 PRINT "PRESS ""2"" TO PLAY
CONTINUOUSLY."

```

```
210 PRINT ;"PRESS ""3"" TO PLAY  
DIFFERENTLY."  
220 PRINT ;"PRESS ""0"" TO PLAY  
ANOTHER"  
230 PRINT "COMPOSITION.": PAPER  
6  
240 PAUSE 0: LET Z$=INKEY$: IF  
Z$="1" OR Z$="2" THEN GO TO 90  
250 IF Z$="0" THEN GO TO 50  
260 CLS : PRINT AT 6,0;"INPUT A  
NUMBER FOR THE DESIRED"  
270 PRINT "TEMPO. THE PROGRAMM  
ED TEMPO IS"  
280 PRINT "10. A SMALLER NUMBER  
WILL MAKE"  
290 PRINT "THE TEMPO FASTER; A  
LARGER"  
300 PRINT "NUMBER WILL MAKE IT  
SLOWER."  
310 INPUT TT: GO TO 90  
320 SAVE "BOX 3" LINE 10  
2000 DATA "",1  
3000 DATA "",1  
4000 DATA "",1  
5000 DATA "",1  
6000 DATA "",1
```

* Explanation of the program *

The program is a combination of Programs 15 and 25 without the option for changing the tonality of the compositions (in this respect the program is similar to Program 24).

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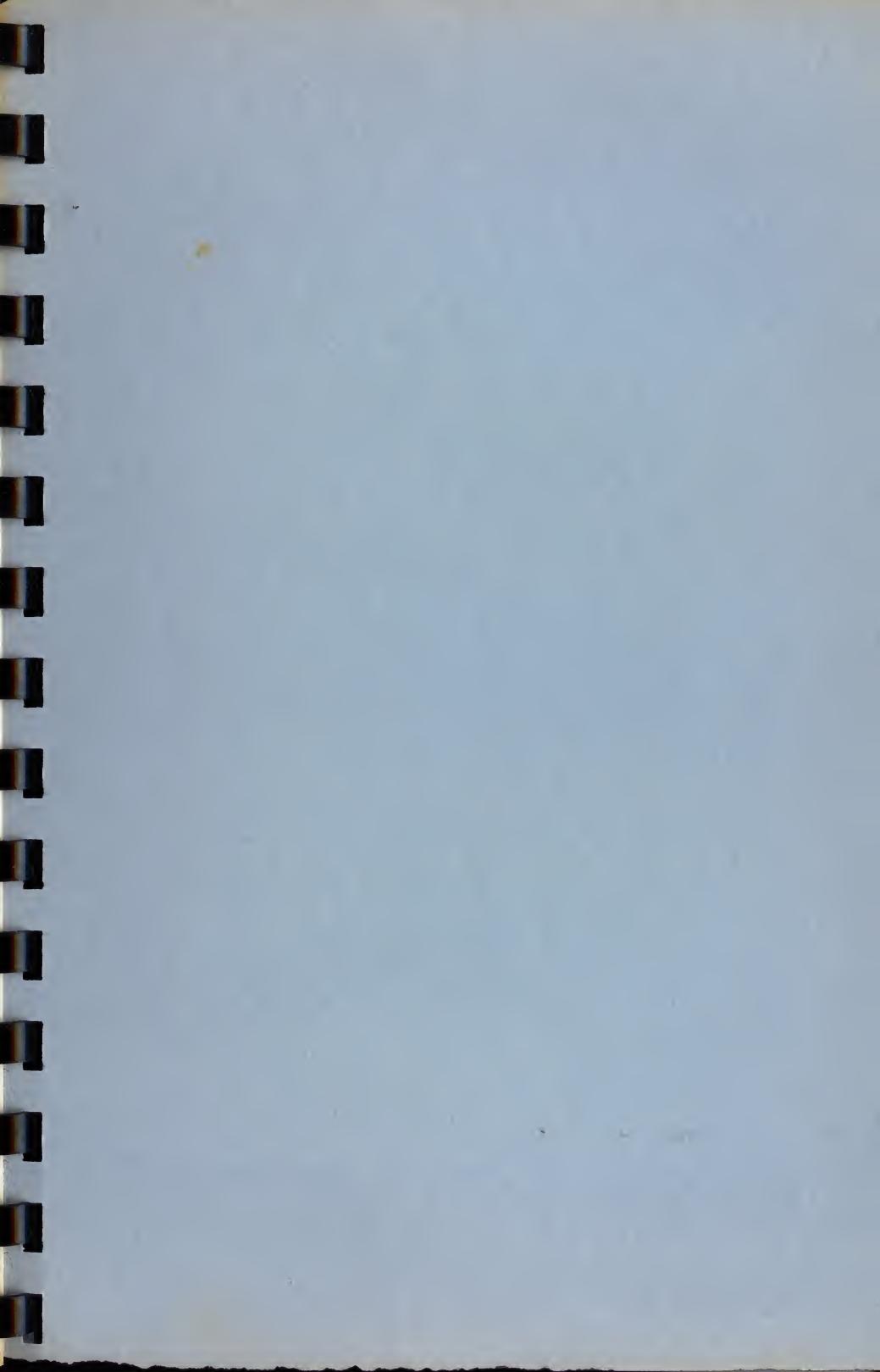
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